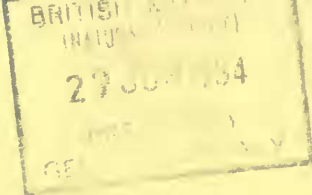


# Bulletin of the British Museum (Natural History)



A review of the genera  
of Indo-Pacific Encyrtidae  
(Hymenoptera: Chalcidoidea)

John S. Noyes & M. Hayat

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work is required. Conversely, where we agree it should give workers a greater degree of confidence in any proposed taxonomic changes. There will thus also be a measure of duplication between our two works, but hopefully this has been kept to a minimum.

Contributions to knowledge of the fauna of other areas of the Indo-Pacific region have included papers by several authors, e.g. Ashmead (1905*a,b*), Girault (1919*a,b*; 1920*c*), Gahan (1927*b*), Ferrière (1931), Eady (1960*a,b*), Kerrich (1963; 1967; 1978) also Subba Rao (1970; 1973; 1978) and Trjapitzin (1965) on the fauna of South East Asia, whilst Perkins (1910), Swezey (1946), Fullaway (1946), Timberlake (1920; 1924; 1941) and Beardsley (1969; 1976) contributed papers on the fauna of the Hawaiian Islands and other Pacific islands.

The present study recognises 263 described genera and 977 described species of Encyrtidae as occurring in the Indo-Pacific region. The types, or reliably determined specimens of virtually all of the described species known from the area, have been examined by either one or both of us. This includes examination (by JSN) of nearly all of the types of the species described by Girault from South East Asia and Australia. We have also examined a great deal of unidentified material collected from all over the region.

The relationship between faunas of the various component areas of the Indo-Pacific region and other zoogeographical areas in terms of distribution of the genera is summarised in Tables 1 and 2. Here the relationship between these areas is indicated by the number of genera with distributions which are restricted to a particular type. For example, five genera are distributed from the Indian subcontinent to Australasia excluding Australia (Table 1; line 3 column 4, or, line 4 column 3), but nine from the Indian subcontinent to Australia (Table 1; line 2, column 4, or, line 4, column 2); similarly six genera are distributed from Australasia (excluding Australia) to Africa and Europe (Table 2; line 3, column 3), but four are restricted to India and the Palearctic and Afrotropical regions (Table 2, line 7, column 4). As might be expected, the Australian fauna has a strong relationship with that of the Oriental region, there being at least 11 genera known only from Australia, through India to the Afrotropical region and at least a further 30 genera found in South East Asia and Australia only. Sixteen genera have been found only in India and 60 only in Australia, but this probably reflects the activities of collectors rather than actual distribution. It is apparent that the relationship between the Australian and Neotropical faunas is not as strong as suggested previously (Noyes, 1980), although there are some genera known only from the Australasian and Neotropical regions, e.g. *Austroencyrtus*, and from the Oriental, Australasian and Neotropical regions, e.g. *Meniscocephalus*.

**Table 1** The relationships between the encyrtid faunas of the component areas of the Indo-Pacific region (given in numbers of genera).

Geographical region	Pacific	Australia	Australasia (excluding Australia)	Indian subcontinent
Continuous distribution to Pacific only	5	1	1	4
Continuous distribution to Australia only	1	60	10	9
Continuous distribution to Australasia only (excluding Australia)	1	10	16	5
Continuous distribution to the Indian subcontinent	4	9	5	16

Keys to genera found in other zoogeographical regions have been published by Trjapitzin (1971*a*) for the Palearctic region, Trjapitzin & Gordh (1978*a,b*) for the Nearctic region, Prinsloo & Annecke (1979) for the Afrotropical region, and Noyes (1980) for the Neotropical region.

**Table 2** The relationships between the encyrtid faunas of the component areas of the Indo-Pacific region (given in numbers of genera) and other zoogeographical areas.

Geographical region	Pacific	Australia	Australasia (excluding Australia)	Oriental
Continuous distribution to Europe and Africa	—	11	—	—
Continuous distribution to Europe excluding Africa	—	1	1	3
Continuous distribution to Africa excluding Europe	2	11	6	7
Stated region plus Palaearctic only	—	3	—	—
Stated region plus Neotropics only	—	1	5	—
Stated region plus New World only	—	—	—	6
Stated region, Palaearctic, and Africa only	—	—	—	4

Cosmopolitan genera 50, introduced or probably introduced genera 10, other distribution patterns 15

### Notes on generic review

#### Classification

Currently there are two basic systems of classification of the Encyrtidae in use. Most previous authors (Erdős & Novicky, 1955; Hoffer, 1955; Compere & Annecke, 1960; Tachikawa, 1963; Kerrich, 1967) have divided the family into three subfamilies: Arrhenophaginae, Antheminae and Encyrtinae, the last mentioned containing almost all known genera. In the present work we follow Trjapitzin (1973a,b) who recognises only two subfamilies, the Tetracneminae and the Encyrtinae, which can be separated as follows.

**Tetracneminae.** Paratergites present or at least represented by a membranous strip which connects the outer plates of the ovipositor to the sides of the last gastral tergite, either along its length or at the base near the cercal plates only. Linea calva of forewing with undifferentiated margins and filum spinosum almost always absent. Hypopygium triangular and always reaching apex of gaster. Mandibles with all teeth apically acute (except *Doliphoceras siccus* Prinsloo & Annecke from southern Africa).

**Encyrtinae.** Paratergites almost always absent (present in some *Trechmites* and *Cercobelus*). Linea calva of forewing generally with setae on proximal side longer and stronger than those on distal side. Filum spinosum almost always present. Hypopygium often short and subrectangular (not reaching more than half way along gaster) but often triangular and reaching apex of gaster. Mandibles sometimes with a broadly truncate edge or tooth.

Trjapitzin divides the Tetracneminae into 12 tribes and the Encyrtinae into 36 tribes. We feel that many of these tribes are unnecessary and occasionally they are even placed by Trjapitzin in the wrong subfamily, e.g. Mirini, Neodiscodini, Rhinocyrtini. Even so his study is the most detailed to date (although it is based mainly on the Palaearctic Fauna whilst encyrtids are a predominantly tropical group), therefore we have attempted to place, as far as possible, the Indo-Pacific genera according to his proposed classification. At the same time we have commented on several tribes and subtribes which require some modification. A new system of tribal classification is not proposed here since this is beyond the scope of the present work; the genera are arranged alphabetically, although a summary of their possible systematic positions in relation to Trjapitzin's classification is given on p. 353.

#### Taxonomic changes

Unless otherwise stated, the new generic and specific synonymies and the new combinations have resulted from the examination of relevant type-material. Generally, if genera are here

synonymised without comment, the relevant type-species are so close morphologically as to be difficult to separate even at specific level. This usually applies only to genera described by Girault from Australia. For new combinations, comments are limited to those species where we feel that this is necessary, since to discuss each proposed new combination would greatly and unnecessarily increase the length of the text.

### Notes on key

The encyrtid genera are not easily keyed into distinct groups such as subfamilies, tribes etc., therefore the key deals with all genera together and may thus prove very daunting to the user because of its length. We have tried to overcome this by dividing the key into groups of not more than 27 couplets. Each group is entered from one of the first 44 couplets and is delimited by couplet numbers in bold type. The genera in each group are not necessarily related. Thus, to arrive at a generic name, it should not be necessary to run any specimen through more than 29 couplets and generally fewer than that.

Some of the characters used to separate groups of genera, e.g. relative widths of scape, position of apex of hypopygium, relative length of funicle segments, forewing hyaline or infusate etc., can be rather weak or ambiguous. For instance, it is not always easy to be certain whether a wing is truly hyaline or slightly infusate; however, in several such instances, a species has been keyed out to the relevant genus via both alternatives. Some of the couplets are complex. It is therefore possible for the user to make a wrong decision and go hopelessly wrong unless both alternatives of a couplet have been carefully read and understood before a decision is made to go one way or the other. The key is almost entirely artificial, therefore it must be stressed that all determinations should be confirmed by comparison of the relevant material with a reliable generic description. It must also be remembered that a specimen does not necessarily belong to an undescribed genus if it does not run easily through the key or if it runs directly to a genus to which the user knows that it cannot belong. Even if the key is used correctly it is likely that only a small majority of species will run to the correct genus. This is because it is doubtful whether the present review covers more than a very small fraction of the species which actually occur in the region and which can be placed in already recognised genera.

It is inevitable that there has to be some degree of simplification in a work with as large a coverage as this, and which deals with many poorly worked genera; this is particularly so with regard to the separation of some of the genera within taxonomically difficult groups, e.g. Anagyrini, Cheiloneurini, Habrolepidini and Microteryni (subtribe Syrphophagina) (see comments under relevant genera). Such simplification has been necessary in order to complete the key and to avoid making it difficult to use.

Finally, the males are not keyed to genera because those of a very large number of Indo-Pacific genera are not known; also our experience has shown that most entomologists do not attempt to place unknown males to genus.

### Notes on terms and measurements

Unless otherwise stated in the captions, the figures were drawn directly from slide-mounted material using a drawing tube attachment on a compound microscope, therefore relative measurements can be taken directly from these figures. However, such measurements must not be made where the points of reference for these were not equidistant from the objective of the microscope when these drawings were made, e.g. relative width of scape (since the scape is rarely absolutely flat on a slide mounted specimen), relative distance of antennal toruli from mouth margin, relative length of malar space to eye length, POL to OOL, etc. These measurements are only reliable if taken from a dry, card-mounted specimen.

#### Head (Figs 1–4)

*Antennal clava.* Composed of one to three segments. If more than one segment then these are separated by partial or complete sutures and are not as clearly separated as the funicle segments.

The apex of the clava has a sensory part which is indicated by an area of micropilosity and/or microtubules and/or a sieve-plate structure (these are individually only visible on a good slide preparation examined at high magnification). This sensory part is easily seen on dry-mounted material, is usually flattened and may either be transverse, oblique or a narrow horizontal strip. If it is large it gives the clava a truncate appearance, thus the clava may appear transversely or obliquely truncate as opposed to apically rounded. Often a slide-mounted antenna which is apically obliquely truncate will appear to be apically rounded; this may either result from the clava not being correctly orientated or the sensory part having been inflated during clearing. Therefore when using the following key it is best to determine the presence or absence of an oblique truncation using dry-mounted material.

*Antennal funicle.* This does not include the anellus (or false ring-joint of Timberlake, 1922b: 168, 172), which may be present or absent but is almost always hidden by the pedicel and invisible in dry-mounted material. In the Encyrtidae the anellus never bears setae, whereas the funicle segments always bear setae (although sometimes very short). The relative length of the setae to the diameter of the segments can be taken directly from the text-figures.

*Eye.* The measurements of length and breadth are the maximum and minimum diameters respectively; the points from which the measurements are taken should be equidistant from the objective of the microscope (i.e. both in focus simultaneously).

*Frontoververtex width.* The measurements are taken either at the level of the anterior ocellus or at the point where the frontoververtex is narrowest, as stated in text.

*Head width.* The maximum width of the head either in frontal view (as in Fig. 3) or side view (as in Fig. 4), as stated in text.

*Malar space.* The minimum distance between eye and mouth margin. The measurement is taken as for eye (above).

*Malar sulcus.* The sulcus joining the lower margin of the eye and mouth margin (see Figs 3, 4), sometimes absent but usually indicated by a slight change of sculpture.

*Mandibles.* The dentition can vary as follows: without teeth (Fig. 218), with one long curved tooth (Fig. 129), one tooth and a broad truncation (Figs 14, 121, 189, 229, 271), two teeth, two teeth and a truncation (Figs 75, 122, 225, 347, 381), two teeth and a rudimentary third tooth, three teeth (Figs 76, 123, 136, 144, 178, 221, 397, 435, 443) or four teeth (Figs 116, 188, 293, 294). However, this is not always clear since the distinction between two teeth and a truncation and three teeth is often not very great (see Figs 76, 123, 347). Similarly for the difference between one tooth and a truncation and two teeth and a truncation (see Figs 74, 115, 319), between three teeth and four teeth (see Fig. 188) and occasionally also between two teeth and a truncation and four teeth.

*OOL.* The minimum distance *between* the eye margin and the nearest posterior ocellus (see Fig. 2).

*POL.* The minimum distance *between* the posterior ocelli (see Fig. 2).

## Thorax (Figs 5–7)

### Forewing (Fig. 5).

Filum spinosum: a series of peg-like setae on distal margin of linea calva which are clearly stouter than adjacent setae.

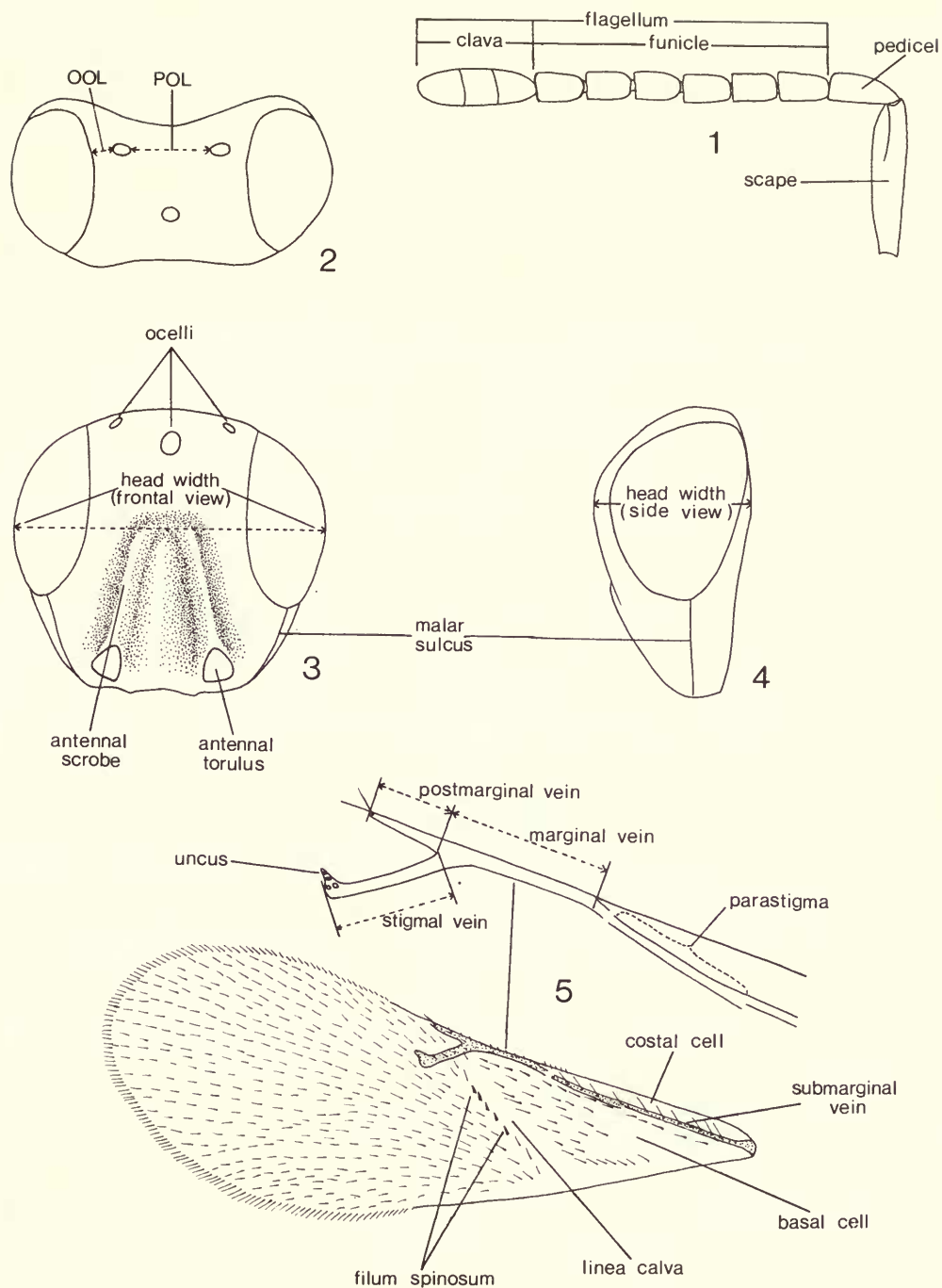
Length of forewing: measured from most proximal part of costal cell to apex of wing.

Linea calva (or speculum of some authors): an oblique hairless line extending from just below marginal and stigmal veins to posterior margin of forewing.

Marginal vein: measured from where the submarginal vein reaches the anterior margin of wing (as shown in Fig. 5), or from where the anterior edge of the venation at the junction of the submarginal vein is abruptly angled and not from the subapical hyaline break of the submarginal vein.

Parastigma: a very slight to strong swelling of the apical one-third of the submarginal vein.

Postmarginal vein: measured as shown in Fig. 5, its apex usually indicated by a single, relatively long, suberect seta.



**Figs 1-5** 1, generalized encyrtid ♀ antenna, left, outer aspect; 2, generalized encyrtid ♀ head, dorsal aspect; 3, generalized encyrtid ♀ head, frontal aspect; 4, generalized encyrtid ♀ head, aspect from left side; 5, generalized encyrtid forewing, upper surface.

Stigmal vein (or radial vein of some authors): measured as shown in Fig. 5. There are usually four (sometimes fewer) circular sensillae at its apex. The relative position and number of these sensillae are occasionally very useful in separating generic groups.

Uncus: beak-like process often arising from apex of stigmal vein.

*Notaular lines* (or parapsidal lines of some authors) (Fig. 6). These are occasionally difficult to see in dry-mounted material unless viewed under correct light conditions.

*Propodeum*. The length is measured along the mid-line.

*Scutellum*. The length is measured along the mid-line; the breadth excludes the axillae.

## Gaster (Fig. 8)

*Cerci* (or pygostyles of some authors). The relative position is measured in dry-mounted material; if it is measured in material which has been in alcohol or slide-mounted, the gaster may be distended and the cerci will be positioned relatively nearer the apex of the gaster.

*Gonostylus*. The third valvula, or ovipositor sheath, as seen in slide-mounted material.

*Hypopygium* (or subgenital plate of some authors). The relative position of the apex is measured in dry-mounted material. Care must be taken to take this measurement from specimens in which the ovipositor has not dropped down into the laying position, particularly in the Encyrtinae. Here the hypopygium is usually retracted during oviposition and thus a hypopygium which normally reaches the apex of the gaster will often appear to reach only half to two-thirds of the way along the gaster.

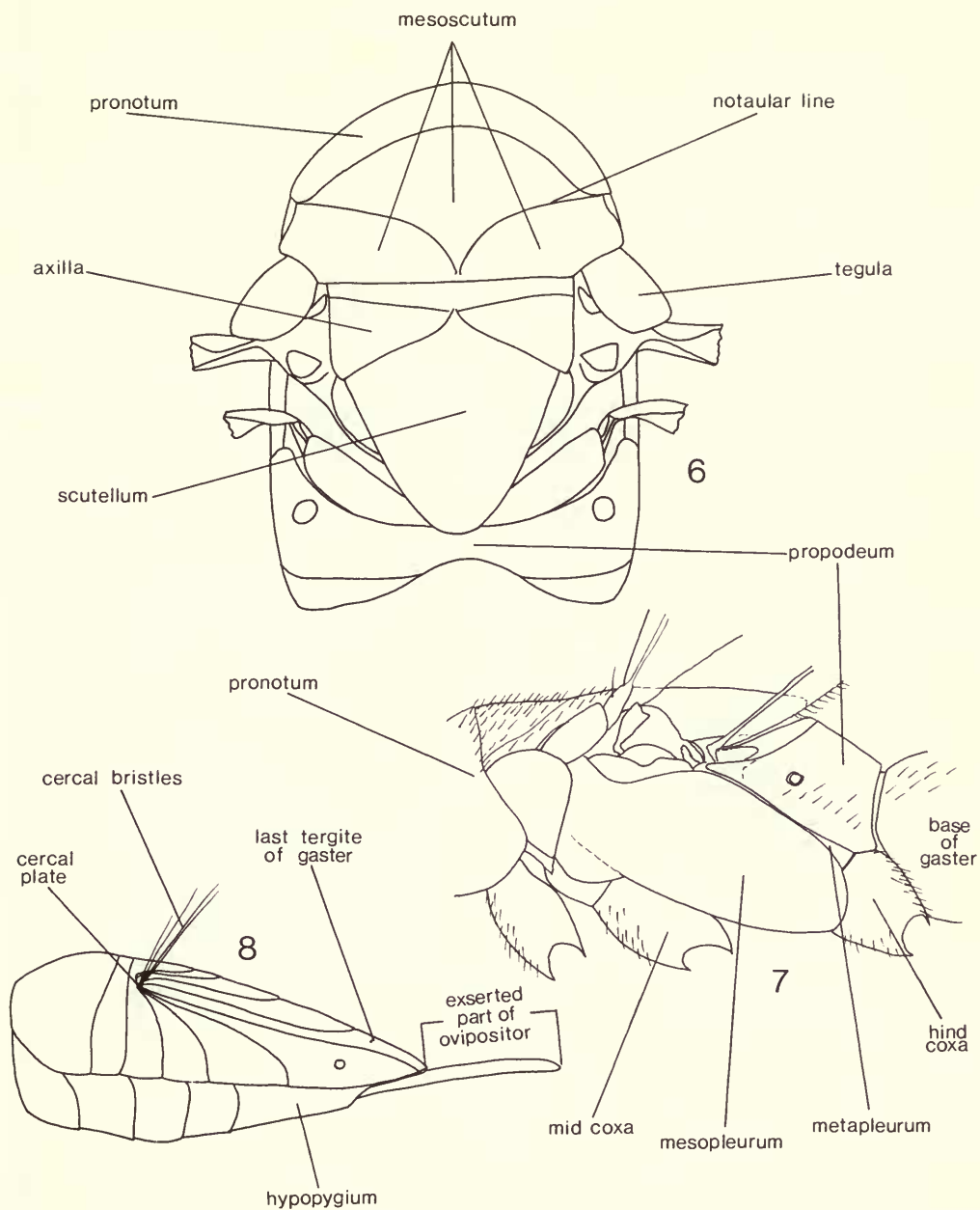
*Last tergite* (syntergum or epipygium of some authors). Its length is measured from its apex to the centre of an imaginary line connecting the cercal plates.

*Ovipositor*. The length of the exerted part is measured from the apex of the last gastral tergite (never hypopygium) in dry-mounted material. If material has been in alcohol the gaster may be distorted and the ovipositor may appear to be relatively more exerted; in this case it would be better to use the relative lengths of the exerted parts of the gonostyli (ovipositor sheaths).

*Ovipositor sheath*. The gonostylus as seen in dry-mounted material.

## Abbreviations

- AMNH American Museum of Natural History, New York, USA.  
 ANIC Australian National Insect Collection, Division of Entomology CSIRO, Canberra, Australia.  
 BMNH British Museum (Natural History), London, UK.  
 BPBM Bernice P. Bishop Museum, Honolulu, Hawaii.  
 CNC Canadian National Collection, Biosystematics Research Institute, Ottawa, Canada.  
 DSIR Division of Entomology, Department of Scientific and Industrial Research, Auckland, New Zealand.  
 GC Gijwijt collection, c/o M. J. Giswijt, PO Box 4, 1243 ZG, 'S-Graveland, Netherlands.  
 HC Hayat collection, c/o M. Hayat, Department of Zoology, Aligarh Muslim University, Aligarh, India.  
 HDOU Hope Museum, Oxford University, Oxford, England.  
 HNHM Hungarian Natural History Museum, Budapest, Hungary.  
 IPK Institute für Pflanzenschutzforschung, Eberswalde, DDR.  
 MCSN Museo Civico di Storia Naturale, Genova, Italy.  
 PPRI Plant Protection Research Institute, Pretoria, South Africa.  
 QM Queensland Museum, Brisbane, Australia.  
 UCR University of California, Riverside, California, USA.  
 USNM National Museum of Natural History, Washington DC, USA.  
 RMNH Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands.  
 SAM South Australian Museum, Adelaide, Australia.  
 ZI Zoological Institute, Academy of Sciences, Leningrad, USSR.  
 ZMCU Zoological Museum, Cambridge University, Cambridge, England.



**Figs 6–8** 6, *Homalotylus flaminius* (Dalman) ♀, thorax, dorsal aspect; 7, *Charitopus* sp. ♀, thorax, aspect from left side; 8, generalized encyrtid ♀ gaster, aspect from left side.

**Key to genera (females)**

1	Tarsi four-segmented . . . . .	45 (p. 143)
–	Tarsi five-segmented . . . . .	2
2 (1)	Funicle with fewer than six segments . . . . .	3
–	Funicle with at least six segments . . . . .	4
3 (2)	Funicle three- or four-segmented . . . . .	46 (p. 143)
–	Funicle five-segmented . . . . .	55 (p. 143)
4 (2)	Forewing shortened, clearly not reaching apex of gaster . . . . .	5
–	Forewing normal, at least very nearly reaching apex of gaster . . . . .	6
5 (4)	Hypopygium reaching or very nearly reaching apex of gaster (at least four-fifths along gaster) . . . . .	73 (p. 144)
–	Hypopygium not reaching more than two-thirds along gaster . . . . .	85 (p. 146)
6 (4)	Scutellum either with a group of coarse, long, dark setae arranged in a more or less compact tuft or bundle (Fig. 47), or with two or more scale-like setae (Figs 44, 48) . . . . .	95 (p. 148)
–	Scutellum without a distinct tuft or bundle of setae or scale-like setae . . . . .	7
7 (6)	Scape not more than three times as long as broad . . . . .	8
–	Scape more than three times as long as broad . . . . .	15
8 (7)	Flagellum broadened and flattened, at most only first funicle segment not transverse (Figs 51–54, 56, 57, 302) . . . . .	104 (p. 150)
–	Flagellum not flattened, more or less cylindrical to broadly oval in cross-section, or if appearing flattened then at least first two segments longer than broad . . . . .	9
9 (8)	Forewing infusate or with a very distinct pattern of dark and pale setae and thus appearing infusate (excluding those species with a very indistinct suffusion of yellow or pale brown or with a very small spot beneath marginal vein which does not or hardly extends past apex of stigmal vein) . . . . .	10
–	Forewing hyaline (including those species with a very indistinct suffusion of yellow or pale brown, or with a small spot beneath marginal vein which does not or hardly extends past apex of stigmal vein) . . . . .	12
10 (9)	Clava strongly apically obliquely truncate, the truncate part clearly longer than remaining portion of ventral surface of clava (Figs 60, 62, 65, 67, 69, 239, 318); pattern of forewing not composed of well-defined stripes and fuscous fasciae . . . . .	120 (p. 154)
–	Clava more or less apically rounded or transversely truncate, or if sutures of clava are oblique and clava thus appears to be obliquely truncate then either truncate part is shorter than remaining portion of ventral surface of clava or forewing has a strong pattern of well-defined stripes and fasciae . . . . .	11
11 (10)	Hypopygium with apex not reaching more than two-thirds of way along gaster . . . . .	134 (p. 156)
–	Hypopygium reaching apex of gaster . . . . .	143 (p. 158)
12 (9)	Mesoscutum or scutellum or both at least partly yellow, orange or pale orange-brown . . . . .	159 (p. 160)
–	Mesoscutum and scutellum completely dark, not yellow, orange or pale brown . . . . .	13
13 (12)	Face with a pair of longitudinal membranous lines joined below anterior ocellus by a short transverse membranous line (Fig. 105) (these occasionally obscure in dry-mounted material because the head collapses inwards; best seen in slide-mounted specimens) . . . . .	182 (p. 164)
–	Face without membranous lines . . . . .	14
14 (13)	Hypopygium with apex not more than four-fifths along gaster, or if more then exerted part of ovipositor is more than one-third as long as gaster . . . . .	183 (p. 164)
–	Hypopygium with apex more or less reaching apex of gaster; ovipositor not or hardly exerted . . . . .	205 (p. 168)
15 (7)	Malar space very short, not more than one-fifth as long as eye, eye very nearly reaching base of mandible; body metallic green and often with distinct punctate sculpture although this may be relatively shallow; notaular lines absent . . . . .	<b>PARABLASTOTHRIX</b> (p. 314)
–	Malar space longer, at least one-quarter as long as eye, or if shorter then body not metallic green, sculpture not punctate or notaular lines present and complete . . . . .	16
16 (15)	All funicle segments longer than broad . . . . .	17

-	Not all funicle segments longer than broad, at least one segment quadrate or transverse	27
17 (16)	Forewing infusate (excluding those species with only a pattern of dark and light setae, or with an indistinct suffusion of yellow or pale brown, or with a small spot beneath marginal vein which does not or hardly extends past apex of stigmal vein)	18
-	Forewing hyaline (including those species with only a pattern of dark and light setae, or with an indistinct suffusion of yellow or pale brown, or with a small spot beneath marginal vein which does not or hardly extends past apex of stigmal vein)	20
18 (17)	Antennal toruli situated relatively high on head and close together so that they are separated from mouth margin by at least one and one-half times the minimum distance between them (Fig. 128)	222 (p. 172)
-	Antennal toruli separated from mouth margin by much less than one and one-half times the minimum distance between them	19
19 (18)	First funicle segment longer than pedicel	225 (p. 172)
-	First funicle segment not longer than pedicel	238 (p. 176)
20 (17)	Either forewing with linea calva not interrupted on dorsal surface <i>or</i> filum spinosum present <i>or</i> antennal toruli high on head, nearly twice their own lengths from mouth margin	21
-	Forewing with linea calva interrupted or closed on dorsal surface of wing by more than one line of setae <i>and</i> filum spinosum absent <i>and</i> antennal toruli not more than their own lengths from mouth margin	23
21 (20)	Body distinctly dorso-ventrally flattened; pronotum longitudinally divided in middle (as in Fig. 38); ovipositor not or hardly exerted; mandible bidentate	266 (p. 180)
-	Either body not dorso-ventrally flattened, <i>or</i> ovipositor exerted and exerted part at least about half as long as gaster; mandible not bidentate; pronotum entire	22
22 (21)	Either notaular lines present or forewing with submarginal vein having a strongly swollen parastigma (Figs 148, 150, 151); hypopygium always reaching apex of gaster; paratergites usually evident	23
-	Notaular lines absent; forewing with parastigma not or hardly swollen (Figs 132, 152-154, 156-158, 238) or if conspicuously swollen then hypopygium does not reach more than half way along gaster; hypopygium sometimes reaching apex of gaster; paratergites almost always absent	24
23 (20,22)	Notaular lines present in at least anterior part of mesoscutum; linea calva of forewing not interrupted, although occasionally closed on dorsal surface of wing; parastigma clearly swollen (Figs 148, 150, 151)	262 (p. 180)
-	Notaular lines completely absent; linea calva almost always interrupted or widely closed on dorsal surface of wing; parastigma rarely swollen, usually not or hardly wider than proximal part of submarginal vein (Figs 91, 95, 159, 414)	266 (p. 180)
24 (22)	Marginal vein of forewing punctiform or absent	278 (p. 182)
-	Marginal vein of forewing longer than broad	25
25 (24)	Either exerted part of ovipositor at least one-third as long as gaster or propodeum medially more than one-fifth as long as scutellum	290 (p. 186)
-	Neither ovipositor with exerted part as long as one-third length of gaster nor propodeum medially longer than one-fifth length of scutellum	26
26 (25)	Either mesoscutum or scutellum (including axillae) at least partly orange, yellow or orange-brown	307 (p. 188)
-	Both mesoscutum and scutellum (including axillae) dark, not partly orange, yellow or orange-brown	317 (p. 190)
27 (16)	Exserted part of ovipositor (measured from apex of last tergite of gaster to apex of ovipositor) at least as long as one-third length of gaster	28
-	Ovipositor not exerted, or if exerted then exerted part not longer than one-quarter length of gaster	29
28 (27)	Hypopygium not extending more than three-quarters along gaster	344 (p. 196)
-	Hypopygium reaching or very nearly reaching apex of gaster	352 (p. 196)
29 (27)	Either mesoscutum, axillae or scutellum at least partly yellow, orange or orange-brown	30

-	Mesoscutum, axillae and scutellum completely dark, not partly yellow, orange or orange-brown .....	32
30 (29)	Either notaular lines present in at least anterior part of mesoscutum, or forewing infusate (excluding those species with only a pattern of dark and light setae, or with an indistinct suffusion of yellow or pale brown, or with a small spot beneath marginal vein which does not or hardly extends past apex of stigmal vein) .....	370 (p. 200)
-	Notaular lines completely absent; forewing hyaline (including those species with a pattern of dark and light setae only, or with an indistinct suffusion of yellow or pale brown, or with a small spot beneath marginal vein which does not or hardly extends past apex of stigmal vein) .....	31
31 (30)	Head completely dark, not yellow, orange or orange-brown and usually metallic .....	391 (p. 204)
-	Head at least partly yellow, orange or orange-brown, not metallic .....	400 (p. 206)
32 (29)	Submarginal vein of forewing with a subapical triangular expansion (usually indicated by a single, long, semi-erect seta) (Figs 107, 109, 207) .....	415 (p. 208)
-	Submarginal vein of forewing without a subapical triangular expansion .....	33
33 (32)	First funicle segment longer than broad .....	34
-	First funicle segment not longer than broad .....	40
34 (33)	Mesoscutum with complete notaular lines (Fig. 6) .....	<b>HOMALOTYLUS</b> (p. 287)
-	Mesoscutum without notaular lines .....	35
35 (34)	Marginal vein of forewing punctiform or absent .....	418 (p. 208)
-	Marginal vein of forewing longer than broad .....	36
36 (35)	Hind tibia foliaceously flattened and expanded, not more than two and one-half times as long as broad (Fig. 213) .....	<b>NEOCLADIA</b> (p. 306)
-	Hind tibia not expanded and flattened, or if slightly so then at least three times as long as broad .....	37
37 (36)	Linea calva completely obliterated on both dorsal and ventral surfaces of forewing by short, dense setae so that forewing is densely and evenly hairy from base to apex (Fig. 214) .....	<b>NATHISMUSIA</b> (p. 302)
-	Forewing with linea calva not obliterated .....	38
38 (37)	Forewing infusate (excluding those species with an indistinct suffusion of yellow or pale brown, or with a small spot beneath marginal vein which does not or hardly extends past apex of stigmal vein) .....	39
-	Forewing hyaline (including those species with an indistinct suffusion of yellow or pale brown, or with a small spot beneath marginal vein which does not or hardly extends past apex of stigmal vein) .....	434 (p. 212)
39 (38)	First funicle segment at least as long as pedicel .....	457 (p. 214)
-	First funicle segment shorter than pedicel .....	464 (p. 214)
40 (33)	Frontovertex with distinct piliferous punctures which give a thimble-like appearance, if punctures shallow then generally separated by not more than their own diameters .....	475 (p. 215)
-	Frontovertex without deep and distinct piliferous punctures, and not with appearance of surface of a thimble .....	41
41 (40)	Forewing infusate (excluding those species with an indistinct suffusion of yellow or pale brown, or with a small spot beneath marginal vein which does not or hardly extends past apex of stigmal vein) .....	481 (p. 215)
-	Forewing hyaline (including those species with an indistinct suffusion of yellow or pale brown, or with a small spot beneath marginal vein which does not or hardly extends past apex of stigmal vein) .....	42
42 (41)	Scutellum very convex with fine reticulate or reticulate-striate sculpture of a matt or silky appearance; all funicle segments transverse except occasionally the sixth (Figs 390, 395) .....	<b>PARABLATTICIDA</b> (p. 314)
-	Scutellum either not convex or without a reticulate-striate sculpture of silky appearance; if appearing slightly convex and with silky appearance then only first funicle segment is not longer than broad .....	43
43 (42)	Marginal vein of forewing punctiform .....	490 (p. 216)
-	Marginal vein of forewing longer than broad .....	44
44 (43)	Hypopygium more or less reaching apex of gaster .....	499 (p. 217)

- Hypopygium not reaching more than four-fifths along gaster ..... 510 (p. 218)
- 45 (1) Antenna with two to four anelliform segments that are adpressed with clava, clava large, at least as long as remainder of antenna (Fig. 9); forewing broad, at most two and one-quarter times as long as broad, with marginal fringe much shorter than maximum wing width (Fig. 10); mandible with a single pointed tooth ..... **ARRHENOPHAGUS** (p. 235)
- Antenna with five or six funicle segments that are clearly separated from clava, clava at most as long as funicle and pedicel combined (Fig. 13); forewing narrow, not less than three and one-half times as long as wide, with marginal fringe at least as long as wing width (Fig. 12); mandible with apex broadly truncate or serrate (Fig. 14) ..... **ANTHEMUS** (p. 233)
- 46 (3) Forewing hyaline ..... 47
- Forewing infusate ..... 52
- 47 (46) Funicle three-segmented ..... 48
- Funicle four-segmented ..... 49
- 48 (47) Frontovertex with a transverse membranous line between anterior ocellus and antennal toruli, this joined to antennal toruli, or nearly so, by longitudinal membranous lines (Fig. 16); funicle segments strongly transverse and closely adpressed together, clava solid, apically obliquely truncate and much longer than pedicel and funicle together (Fig. 15) ..... **ARRHENOPHAGOIDEA** (p. 235)
- Frontovertex without any membranous lines; funicle segments clearly separated and each quadrate or slightly longer than broad, clava three-segmented, not obliquely truncate and slightly shorter than pedicel and funicle together  
**MARXELLA** (p. 295)
- 49 (47) Funicle segments all longer than broad (Fig. 17); forewing with marginal vein shorter than stigmal (Fig. 18); hypopygium reaching apex of gaster or beyond  
**CERCABELUS** (p. 247)
- Not all funicle segments longer than broad, usually broader than long or quadrate; forewing with marginal vein as long as or longer than stigmal; hypopygium not extending to apex of gaster ..... 50
- 50 (49) Clava two-segmented; mandibles with three acute teeth ..... **NASSAUIA** (p. 302)
- Clava three-segmented; mandibles with one or two teeth and a truncation or four teeth ..... 51
- 51 (50) First funicle segment longer than broad and at least a little longer than the fourth  
**COCCIDENCYRTUS** (p. 253)
- First funicle segment clearly shorter than fourth and transverse .... **PLAGIOMERUS** (p. 325)
- 52 (46) Forewing more or less uniformly infusate, without sharply delimited rays, bands or spots; hypopygium extending to apex of gaster **BRACHYPLATYCERUS** (p. 243)
- Forewing either with infusate rays or bands, or infusate with hyaline patches 53
- 53 (52) All antennal segments flattened, clava obscurely two-segmented (Fig. 19); scutellum without any apical lamelliform setae.  
Forewing as in Fig. 20 ..... **SPANIOPTERUS** (p. 338)
- At most only scape flattened with flagellar segments cylindrical, clava three-segmented; apex of scutellum with at least one pair of lamelliform setae .... 54
- 54 (53) All funicle segments longer than broad ..... **HOMALOPODA** (p. 287)
- Not all funicle segments longer than broad, at least first two segments transverse  
**CAENOHOMALOPODA** (p. 243)
- 55 (3) Antennal flagellum flattened; forewing with an infusate band ..... **ANARHOPUS** (p. 231)
- Flagellum more or less cylindrical, not flattened; forewing hyaline or lightly infusate, without a distinct band ..... 56
- 56 (55) Body dorso-ventrally flattened; pronotum longitudinally divided .... **NEORHOPUS** (p. 307)
- Body robust, not dorso-ventrally flattened but if so then pronotum entire .... 57
- 57 (56) Wings shortened, not reaching apex of gaster; clava three-segmented ..... 58
- Either wings fully developed and reaching apex of gaster, or clava entire ..... 59
- 58 (57) Body entirely yellow ..... **ZEALANDENCYRTUS** (p. 350)
- Body at least partly dark and metallic. .... **TETRACNEMOIDEA** (p. 341)
- 59 (57) Forewing with area immediately below venation from proximal part of parastigma to apex of stigmal vein completely naked and continuous with the

- relatively wide linea calva which is conspicuously broader than length of marginal vein (Fig. 22); mandible bidentate.
- ♂ antenna branched (Fig. 21) ..... **TETRACNEMOIDEA** (p. 341)
- Forewing with area immediately below distal one-third of venation with several setae and not naked, linea calva not or hardly broader than length of marginal vein; mandible with three teeth or one or two teeth and a truncation ..... 60
- 60 (59) Head or thorax at least partly yellow or orange ..... 61
- Head and thorax dark, often shiny and metallic ..... 67
- 61 (60) Clava solid (Fig. 23) ..... 62
- Clava two- or three-segmented ..... 63
- 62 (61) Body dorso-ventrally flattened; head prognathous; pronotum more than half as long as mesoscutum (Fig. 24) ..... **INDAPHYCUS** (p. 289)
- Body not dorso-ventrally flattened; head hypognathous; pronotum much shorter than one-third length of mesoscutum ..... **ACEROPHAGUS** (p. 220)
- 63 (61) Clava two-segmented (Fig. 28) ..... **PSEUDECTROMA** (p. 329)
- Clava three-segmented ..... 64
- 64 (63) Notaular lines present in anterior one-third of mesoscutum; ovipositor not exerted; hypopygium not quite reaching apex of gaster ..... **BEETHOVENA** (p. 241)
- Notaular lines absent; exerted part of ovipositor at least as long as one-fifth length of gaster; hypopygium reaching apex of gaster ..... 65
- 65 (64) Head and thorax clothed with conspicuous dark setae; scape not longer than minimum width of frontoververtex; antennal toruli separated from mouth margin by about their own lengths; forewing with postmarginal vein about as long as stigmal; mandible with two teeth and a truncation ..... **MOZARTELLA** (p. 300)
- Head and thorax clothed with pale or silvery white setae, or if setae dark then scape is longer than minimum width of frontoververtex, antennal toruli are nearly at mouth margin being separated from it by much less than their own lengths (Fig. 25) and forewing with postmarginal vein clearly shorter than stigmal; mandible with three acute teeth ..... 66
- 66 (65) Antenna unicolorous, yellow or orange ..... **ACEROPHAGUS** (p. 220)
- Clava at least partly white contrasting with brown or yellowish brown segments of funicle (Fig. 26)
- Forewing as in Fig. 27 ..... **PSEUDAPHYCUS** (p. 328)
- 67 (60) Forewing with postmarginal vein at least about twice as long as stigmal
- HOLCOTHORAX** (p. 287)
- Forewing with postmarginal vein not or hardly longer than stigmal ..... 68
- 68 (67) Clava transversely or obliquely truncate; notaular lines completely absent; forewing with sensillae at apex of stigmal vein arranged symmetrically in a square ..... 69
- Either clava apically rounded or notaular lines present; forewing with sensillae at apex of stigmal vein arranged asymmetrically, not in a square ..... 70
- 69 (68) Clava entire with apex strongly obliquely truncate, (Fig. 29)
- Base of forewing as in Fig. 30 ..... **COPIDOSOMOPSIS** (p. 258)
- Clava three-segmented with apex more or less transversely truncate . **RAFFAELLIA** (p. 332)
- 70 (68) Notaular lines absent; exerted part of ovipositor at least one-fifth as long as gaster ..... 71
- Notaular lines present; ovipositor not or hardly exerted ..... 72
- 71 (70) Mandible with three acute teeth; forewing with postmarginal vein a little shorter than stigmal ..... **PARARHOPELLA** (p. 318)
- Mandible with one or two teeth and a truncation; forewing with post marginal vein slightly longer than stigmal ..... **MESORHOPELLA** (p. 297)
- 72 (70) Forewing with marginal vein more or less absent, venation not quite touching anterior margin of wing, submarginal vein with parastigma not conspicuously swollen (Fig. 31); scutellum always lustrous blue or green ..... **TRECHNITES** (p. 345)
- Forewing with venation touching anterior margin of wing and marginal vein more or less quadrate, submarginal vein with parastigma conspicuously swollen (Fig. 32); scutellum dull ..... **COCCIDAPHYCUS** (p. 253)
- 73 (5) Propodeum medially at least one-third as long as scutellum (Fig. 33) ..... 74



# A review of the genera of Indo-Pacific Encyrtidae (Hymenoptera: Chalcidoidea)

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## Synopsis

A key to females of the 263 described genera of Encyrtidae recognised from the Indo-Pacific region is provided. Notes on each genus are included and give information on known world distribution, number of described species, distribution of each genus within the area under review, a list of species known from the region, references to original descriptions, redescrptions, revisions or other useful papers, biology, and systematic placement of the genus. Lectotypes are designated for 44 species; 23 genera and 18 species are described as new; one subtribe and one subspecies are raised to tribe and species level respectively; one tribal, one subtribal, 107 generic and 41 specific synonymies, 358 combinations and three replacement names for junior specific homonyms are newly proposed.

## Introduction

The importance of the Hymenoptera Parasitica in biological control programmes is unquestionable. Clausen (1978) reviews a large amount of literature dealing with the introduction of natural enemies to control weeds and pest species of arthropods. A brief scan through this review soon reveals that the majority of insect species introduced to control pests are parasitic Hymenoptera, and that the most important of these are the Chalcidoidea. Perhaps an indicator of the importance of the Chalcidoidea in the field of biological control is *Biocontrol News and*

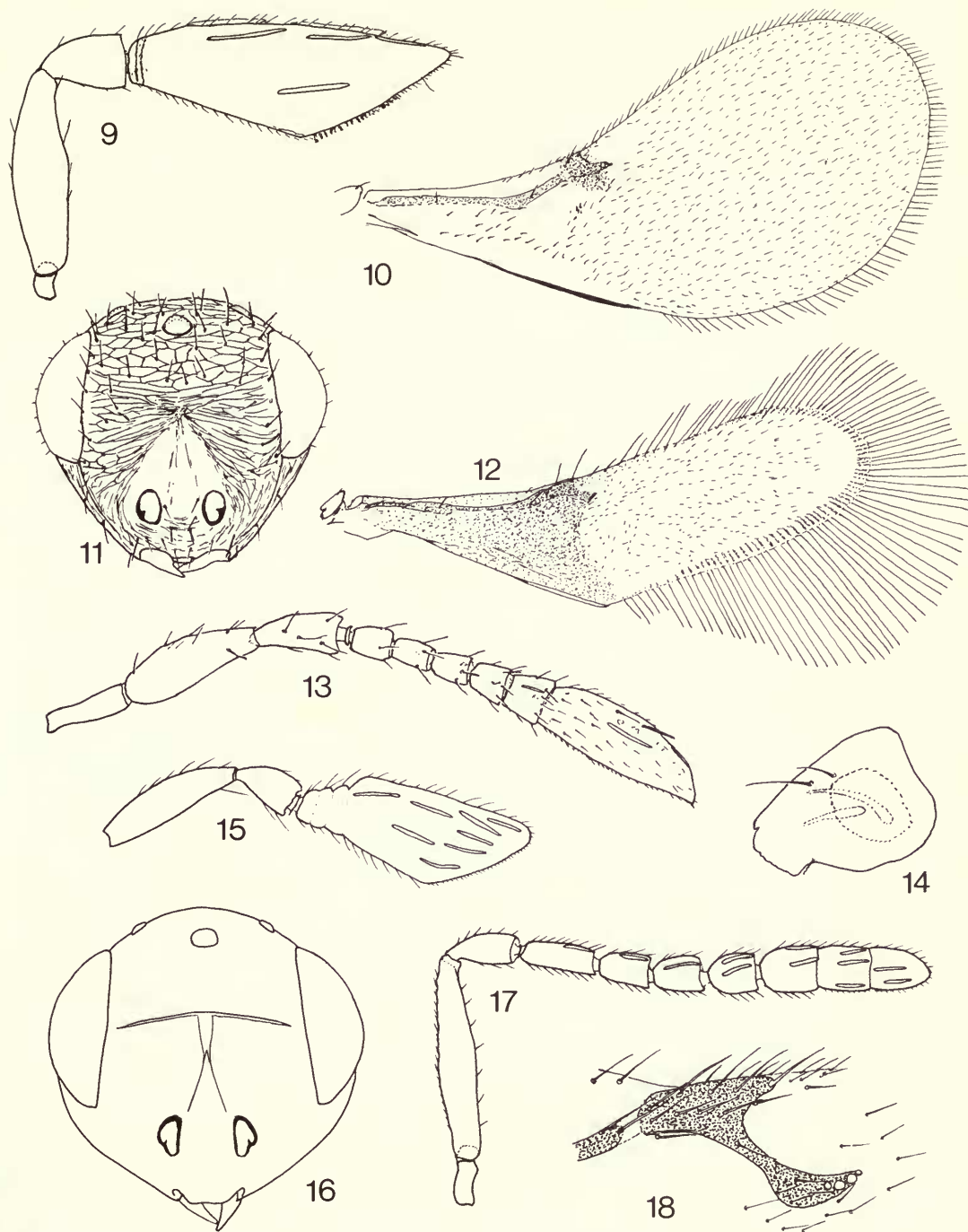
*Information* (published by Commonwealth Agricultural Bureaux, Slough, England), a review of literature relevant to all forms of biological control. Of all the papers reviewed, no fewer than 16 per cent contain references to chalcids. Within the Chalcidoidea, the most important families in this context are the Aphelinidae, Encyrtidae and Trichogrammatidae, species of which are most commonly used to control lepidopterous and hemipterous pests. Of the seven major, successful biological control projects listed by Bosch *et al.* (1982) for California, three have utilised species of Encyrtidae as the controlling agent. That is not to say that species of Encyrtidae are the main controlling agent for 40 per cent of all successful biological control projects, but merely to illustrate that they are, economically, a very important group.

It is essential to be able to identify species accurately in order to convey information about useful or potentially useful species. An important step facilitating the accurate identification of species is a stable classification at the generic and possibly tribal level. Thus, the present review has three aims. Firstly, to attempt to arrange the many poorly understood Australian species and genera of Encyrtidae into some general pattern which agrees as closely as possible with Trjapitzin's (1973*a,b*) classification of the group. Secondly, to bring together all relevant taxonomic information available on the Encyrtidae of the Indo-Pacific region. Thirdly, to facilitate the identification of material collected in this region.

The Indo-Pacific region is defined here as the area south of a line drawn from the northernmost tip of Pakistan to the Hawaiian Islands (also north to Midway Island). This therefore excludes Japan and Korea, but includes southern China, the Pacific islands, Australia and New Zealand. Keys to the genera of the region have been published previously by Girault (1915*a*) for Australia, Beardsley (1976) for the Hawaiian Islands, Hayat *et al.* (1975), Shafee *et al.* (1975) and Alam & Shafee (1982) for India. Unfortunately most of these keys are now obsolete or very incomplete.

The fauna of the Indian subcontinent is probably the best known of any within the region, except perhaps that of Australia. Even so, despite the work of earlier authors, e.g. Howard (*in* Howard & Ashmead, 1896), Gahan (1914), Ayyar & Margabandhu (1934*a,b*) and Mani (1935; 1939; 1941), only 30 genera and 50 species had been recorded from there by the middle of the present century. Later work by other authors, e.g. Subba Rao (1957; 1967), Agarwal (1965), Mani *et al.* (1973; 1974), Hayat *et al.* (1975), Shafee *et al.* (1975), added many more species and genera. Several papers have since been published to clarify the systematic position of many Indian genera and species, notably those of Subba Rao (1976) and Hayat (1979*b*; 1981*a,b*). More recently Hayat & Subba Rao (1981) listed 117 genera and 276 species from the Indian subcontinent.

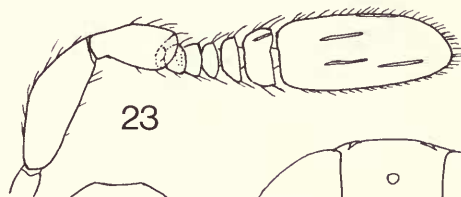
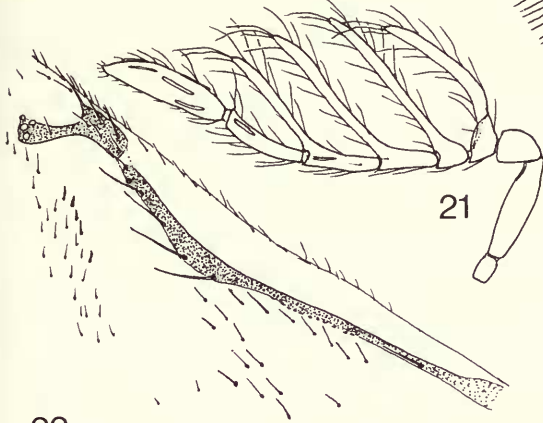
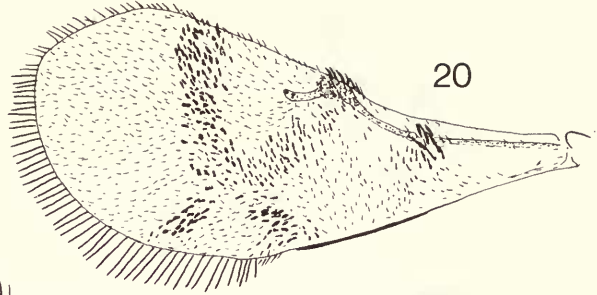
In contrast, largely as a result of the work of A. A. Girault (1911–1941), the number of genera and species 'known' from Australia is much greater. Girault alone described some 150 genera and 347 species of Encyrtidae from that continent. Further species have been described by other authors, e.g. Walker (1839), Howard (1898*b*), Dodd (1917), Timberlake (1929), Compere (1940) and Ferrière (1947). However, until recently, most of Girault's taxa have remained unrecognised, mainly because of his inadequate descriptions and poor treatment of material, and the inaccessibility of his type-material to taxonomists outside Australia. Fortunately the work of E. C. Dahms at the Queensland Museum, Brisbane has now enabled a number of specialists to study the Girault Australian type-material, e.g. Bouček (all families except Encyrtidae, Aphelinidae and Mymaridae), De Bach & Rosen, Hayat (Aphelinidae), New (Mymaridae), and Gordh & Dahms (Encyrtidae). The work of Gordh (UCR) & Dahms (QM) overlaps with the present review since it includes detailed, illustrated, redescriptions of all encyrtid genera described by Girault from Australia. Unfortunately it is not yet available but should be published shortly after the present review. Therefore we are unable to include comment on their opinions concerning these genera and many of the species included in them by Girault. However, in discussion with both Gordh and Dahms it is apparent that there is a large measure of agreement between us concerning the status of many of Girault's genera and the placement of most species, but at the same time there is also some disagreement. The latter is inevitable considering the state of many of Girault's types, but at least it may show where future



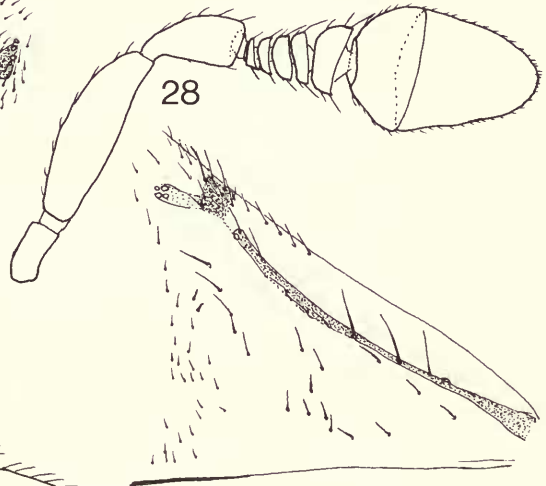
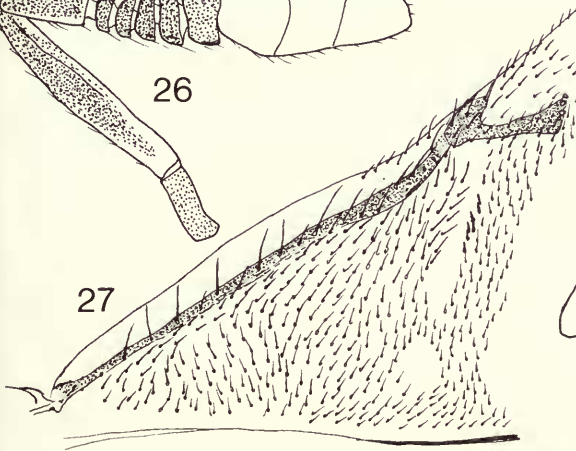
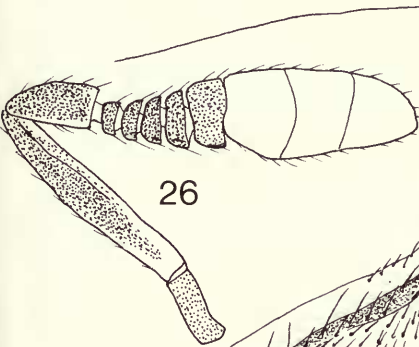
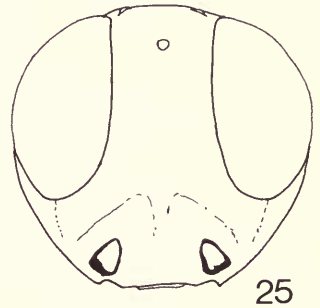
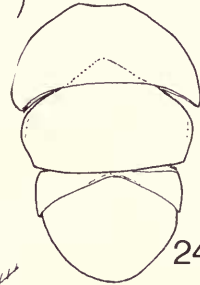
**Figs 9-18** 9-11, *Arrhenophagus* sp., (9) right antenna, outer aspect, ♀, (10) right forewing, upper surface, ♀, (11) head, frontal aspect, ♀; 12-14, *Anthemus maculatus* Subba Rao, (12) right forewing, upper surface, ♀, (13) right antenna, outer aspect, ♀ (14) right mandible, ♀; 15, 16, *Arrhenophagoidea bicoloripes* Girault, (15) right antenna, outer aspect, ♀, (16) head, frontal aspect, ♀; 17, 18, *Cercobelus jugaeus* (Walker) (extra-limital species), (17) left antenna, inner aspect, ♀, (18) apex of right forewing venation, upper surface, ♀.

–	Propodeum medially not more than one-fifth as long as scutellum (Figs 34, 35) . . . . .	77
74 (73)	Antenna with scape broadened and flattened, not more than three times as long as broad . . . . .	75
–	Antenna with scape not strongly flattened, at least five times as long as broad . . . . .	76
75 (74)	Clava solid; scutellum concave with a line of scale-like setae at apex	
–	Clava three-segmented, scutellum flat or convex without an apical line of scale-like setae . . . . .	<b>COELASPIDIA</b> (p. 225)
76 (74)	Pronotum long, medially clearly much longer than mesoscutum, mandible bidentate . . . . .	<b>XENANUSIA</b> (p. 347)
–	Pronotum medially shorter than mesoscutum (Fig. 33); mandible with three teeth . . . . .	<b>SCHILLERIELLA</b> (p. 338)
77 (73)	Antenna with all segments broadened and flattened . . . . .	<b>SAKENCYRTUS</b> (p. 336)
–	Antenna with pedicel and flagellum more or less cylindrical, scape occasionally broadened and flattened . . . . .	<b>MIRA</b> (p. 299)
78 (77)	All funicle segments longer than pedicel (Fig. 37); either funicle seven-segmented and clava two-segmented, or flagellum not differentiated into funicle and clava . . . . .	78
–	Not all funicle segments longer than pedicel; funicle six-segmented and clava two- or three-segmented . . . . .	<b>ANOMALICORNIA</b> (p. 232)
79 (78)	Visible part of mesoscutum at least three times as broad as long (Fig. 34) or mesoscutum completely hidden by pronotum . . . . .	79
–	Visible part of mesoscutum not more than two and one-half times as broad as long . . . . .	80
80 (79)	Wings moderately long and capable of meeting at apex of scutellum; fronto-vertex at narrowest point not more than one and one-half times as broad as length of scape; mandible with three teeth . . . . .	81
–	Wings very short, clearly not capable of meeting at mid-line; frontovertex at narrowest point twice as wide as length of scape; mandible bidentate	<b>AUSTROCHOREIA</b> (p. 237)
81 (79)	Antennal toruli very high on head, separated from mouth margin by more than their own lengths; head and thorax covered with very conspicuous dark setae; mandible with one or two teeth and a truncation . . . . .	<b>NEODUSMETIA</b> (p. 306)
–	Antennal toruli separated from mouth margin by less than their own lengths; head and thorax not conspicuously hairy; mandible bidentate . . . . .	<b>HUNTERELLUS</b> (p. 288)
82 (81)	Body not dorso-ventrally flattened; pronotum entire (Fig. 35) . . . . .	82
–	Body dorso-ventrally flattened; pronotum longitudinally divided in middle (Fig. 38) . . . . .	83
83 (82)	Antennal flagellum with brown and white segments (Fig. 36); posterior margin of eye straight or slightly convex . . . . .	84
–	Antennal flagellum unicolorous, dark brown; posterior margin of eye concave so that eye has a kidney-shaped appearance . . . . .	<b>CREMESINA</b> (p. 260)
84 (82)	Eye larger, longer than malar space (Fig. 40) . . . . .	<b>PARECTROMOIDELLA</b> (p. 319)
–	Eye smaller, at least a little shorter than malar space (Fig. 39) . . . . .	<b>RHOPUS</b> (p. 332)
85 (5)	Antenna with all segments distinctly broadened and flattened (Fig. 41)	<b>HAMUSENCYRTUS</b> (p. 283)
–	Antenna with pedicel and flagellum more or less cylindrical, scape occasionally broadened and flattened . . . . .	<b>CERAPTEROCERUS</b> (p. 245)
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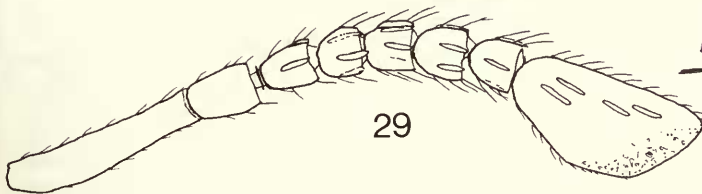
**Figs 19–30** 19, 20, *Spaniopterus crucifer* Gahan, (19) right antenna, outer aspect, ♀, (20) left forewing, upper surface, ♀; 21, 22, *Tetracnemoidea indica* (Ayyar), (21) left antenna, outer aspect, ♂, (22) base of left forewing, upper surface, ♀; 23, *Acerophagus solidus* Hayat, left antenna, inner aspect, ♀; 24, *Indaphycus planus* Hayat, pronotum, mesoscutum and scutellum, dorsal aspect, ♀; 25, *Pseudaphycus utilis* Timberlake, head, frontal aspect, ♀; 26, 27, *Pseudaphycus orientalis* Ferrière, (26) right antenna, outer aspect, ♀, (27) base of right forewing, upper surface, ♀; 28, *Pseudectroma* sp., right antenna, inner aspect (clava slightly collapsed), ♀; 29, 30, *Copidosomopsis nacoleiae* (Eady), (29) right antenna, outer aspect showing truncate sensory surface at apex of clava, ♀, (30) base of left forewing, upper surface, ♀.



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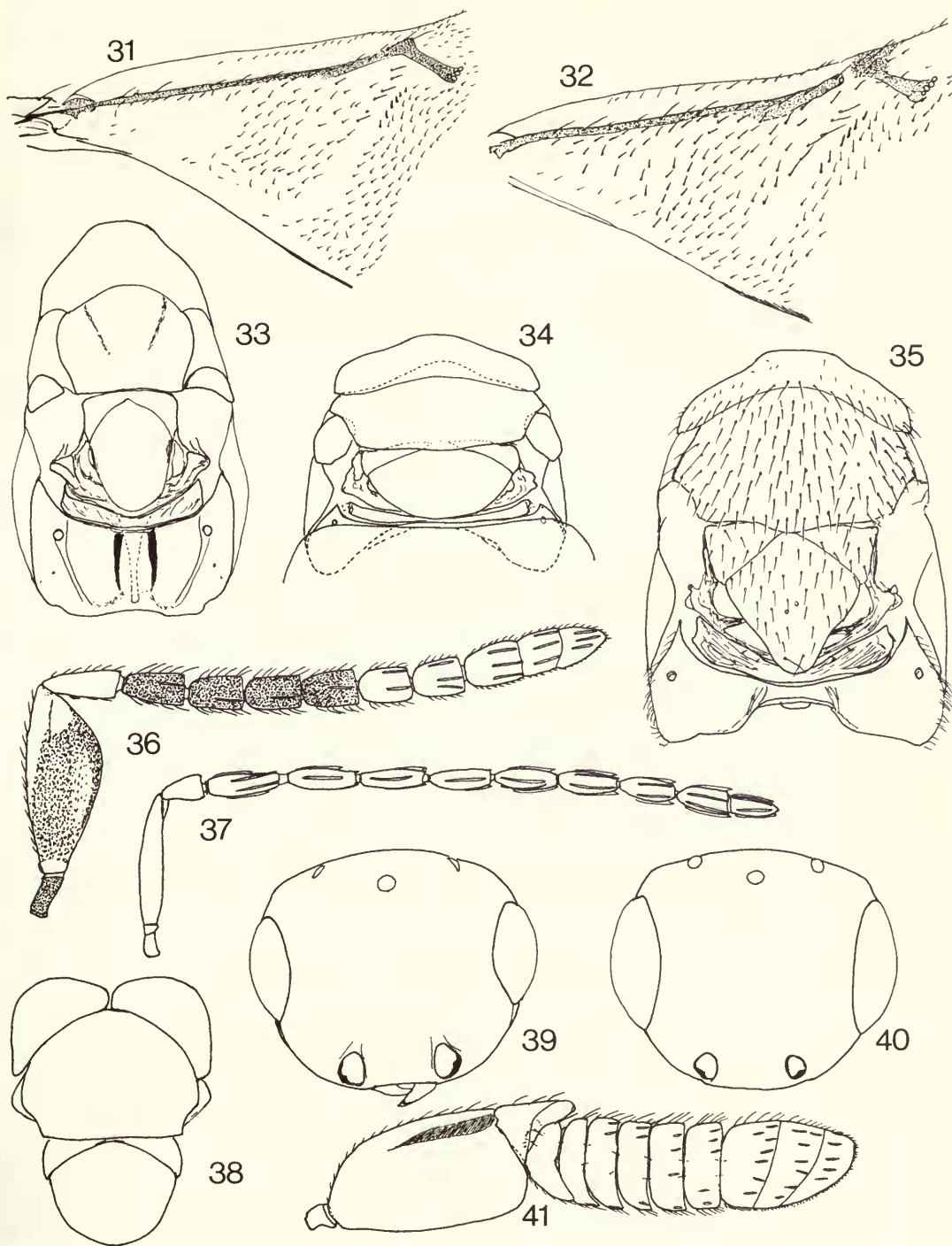
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86 (85)	Scutellum with a subapical group of dark coarse setae arranged in a more or less compact bundle (as in Fig. 47) . . . . .	87
–	Scutellum without such a group of setae . . . . .	88
87 (86)	Mesoscutum with a distinct transverse depression in its posterior one-third; either mesoscutum with a more or less distinct bundle of setae in middle or posterior margin or pronotum has a line of stiff black bristles . . . <b>DIVERSINERVUS</b> (p. 265)	
–	Mesoscutum without a transverse posterior depression; neither mesoscutum with a median bundle of setae nor posterior margin of pronotum with a line of stiff black bristles . . . . . <b>CHEILONEURUS</b> (p. 249)	
88 (86)	Mesoscutum (including part hidden by pronotum) strongly transverse, at least about three times as broad as long and entirely or almost entirely covered by posterior margin of pronotum; mandible with three acute teeth . . . <b>AUSTROCHOREIA</b> (p. 237)	
–	Mesoscutum (including part hidden by pronotum) not or hardly more than twice as broad as long and only slightly covered by pronotum anteriorly, or if about three times as broad as long then mesoscutum only slightly covered by pronotum anteriorly and mandible with one or two teeth and a truncation . . .	89
89 (88)	Thorax entirely dark and metallic, not partly yellow or orange . . . . .	90
–	Thorax at least partly yellow or orange . . . . .	92
90 (89)	Clava with a strong oblique apical truncation (as in Fig. 43); posterior margin of mesoscutum more or less straight and not projecting over axillae so that when thorax viewed from above the axillae more or less meet (Fig. 42); gaster entirely dark; mandible with three acute teeth . . . . . <b>HYPERGONATOPUS</b> (p. 288)	
–	Clava apically more or less rounded (Fig. 45); posterior margin of mesoscutum covering axillae in middle so that when thorax viewed from above the axillae appear to be widely separated (Fig. 44); gaster often orange or yellow at base; mandible usually with one or two teeth and a truncation, although occasionally obscurely tridentate . . . . .	91
91 (90)	Forewing with at least apex infusate . . . . . <b>XENOENCYRTUS</b> (p. 348)	
–	Forewing hyaline . . . . . <b>OOENCYRTUS</b> (p. 309)	
92 (89)	Scutellum with a thin apical flange . . . . . <b>PARAPHAENODISCUS</b> (p. 317)	
–	Scutellum without a distinct apical flange . . . . .	93
93 (92)	Wing entirely hyaline . . . . . <b>ECTROMA</b> (p. 268)	
–	Wing infusate . . . . .	94
94 (93)	Pronotum with a pair of distinct, sublateral, elongate white spots . . . <b>*PROCHEILONEURUS</b> Girault (p. 326)	
–	Pronotum unicolorous, without a pair of sublateral white spots . . . . <b>MICROTERYS</b> (p. 299)	
95 (6)	Scutellum with two or more scale-like setae . . . . .	96
–	Scutellum with a group of coarse, long, dark setae arranged in a more or less compact bundle . . . . .	98
96 (95)	Apical one-third or so of scutellum with a few short, scale-like setae and with a pair of slightly larger scale-like setae at apex (Fig. 46); forewing more or less uniformly infusate; head and thorax mostly yellow . . . . . <b>LAKSHAPHAGUS</b> (p. 291)	
–	Apex of scutellum with conspicuously longer, more distinctly scale-like setae than remainder, these occasionally very large and up to 12 or more in number (Fig. 48); forewing infusate with well-defined hyaline areas; body wholly dark and metallic . . . . .	97

\* Not to be confused with *Prochiloneurus* Silvestri (p. 327)

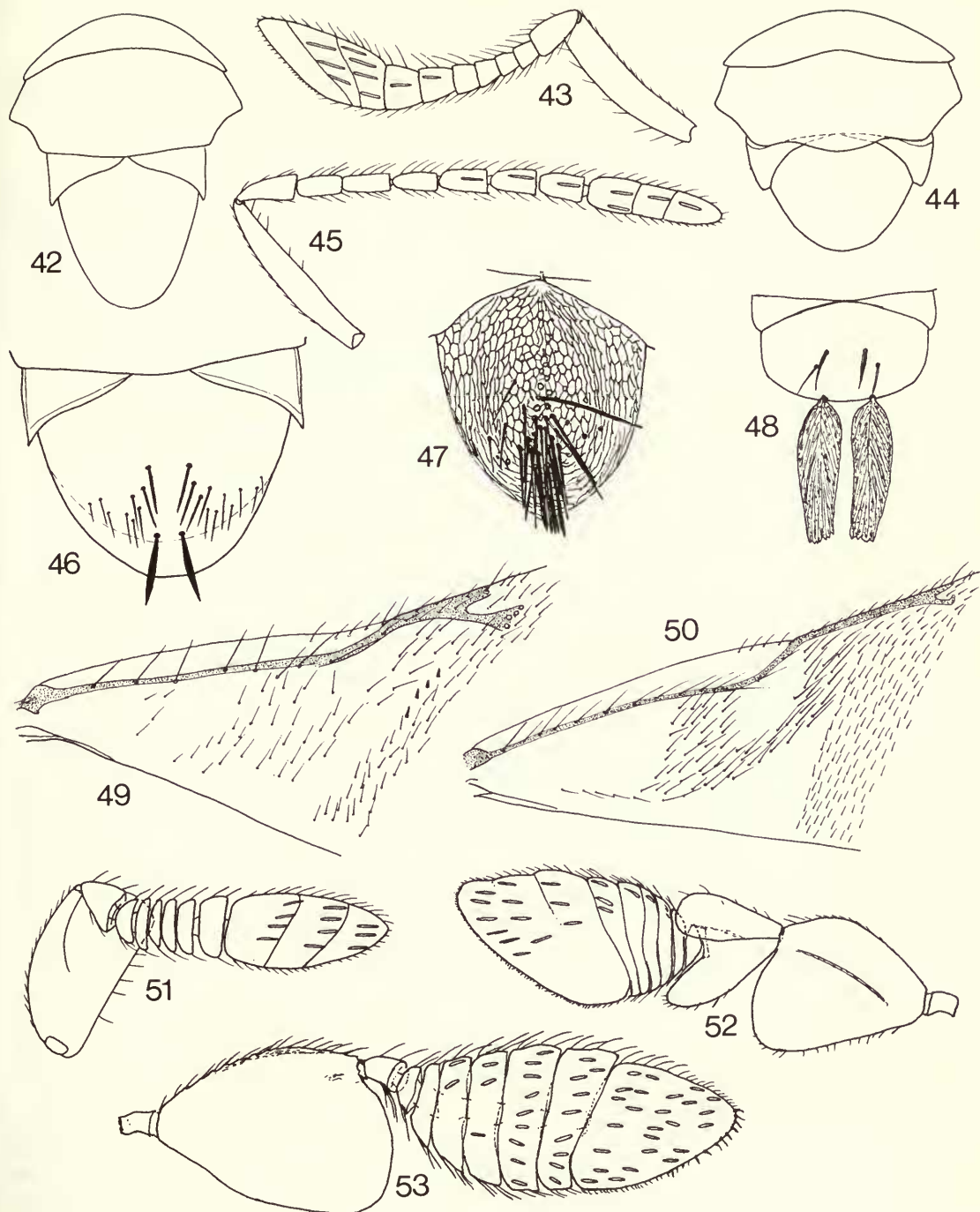
**Figs 31–41** 31, *Trechnites flavipes* (Mercet) (extra-limital species), base of right forewing, upper surface, ♀; 32, *Coccidaphycus* sp., base of right forewing, upper surface, ♀; 33, *Sakencyrtus* sp., thorax, dorsal aspect, ♀; 34, *Neodusmetia sangwani* (Subba Rao), thorax, dorsal aspect, ♀; 35, 36, *Cremesina* spp., (35) thorax, dorsal aspect, ♀, (36) right antenna, outer aspect, ♀; 37, *Anomalicornia* sp., right antenna, outer aspect, ♀; 38, 39, *Hamusencyrtus mymaricoides* (Compere, Subba Rao & Kaur), (38) pronotum, mesoscutum and scutellum, dorsal aspect, ♀, (39) head, frontal aspect, ♀; 40, *Rhopus* sp., head, frontal aspect, ♀; 41, *Cerapterocerus mirabilis* Westwood (extra-limital species), right antenna, outer aspect, ♀.



97 (96)	Apex of scutellum with about 10 to 14 long, slightly flattened, scale-like setae arranged in a line . . . . .	<b>RUSKINIANA</b> (p. 336)
–	Apex of scutellum with at most two pairs, usually only with one, of slightly to strongly broadened and flattened scale-like setae (Fig. 48) . . . . .	<b>HABROLEPIS</b> (p. 281)
98 (95)	Mesoscutum with a group of coarse, long, dark setae arranged in a more or less compact bundle and with a transverse depression in posterior one-third which bears silvery white setae . . . . .	<b>DIVERSINERVUS</b> (p. 265)
–	Mesoscutum without such a bundle of setae, posterior one-third without a transverse depression, although occasionally with silvery white setae . . . . .	99
99 (98)	Forewing with marginal vein at most only a little longer than broad, several times shorter than either stigmal or postmarginal veins; mandible edentate with a rounded, sharp edge . . . . .	<b>ENCYRTUS</b> (p. 268)
–	Forewing with marginal vein at least nearly as long as stigmal; mandible with three teeth or two teeth and a truncation . . . . .	100
100 (99)	Forewing hyaline . . . . .	101
–	Forewing infusate . . . . .	102
101 (100)	Forewing with marginal vein at least three times as long as stigmal, parastigma strongly downcurved (Fig. 50) . . . . .	<b>CHEILONEURUS</b> (p. 249)
–	Forewing with marginal vein only slightly longer than stigmal, parastigma normal (Fig. 49) . . . . .	<b>ZAOMMA</b> (p. 349)
102 (100)	Forewing with a pair of interrupted hyaline fasciae distad of apex of venation, marginal vein not longer than stigmal . . . . .	<b>MICROTHERYS</b> (p. 299)
–	Forewing without hyaline fasciae distad of apex of venation, marginal vein at least twice as long as stigmal . . . . .	103
103 (102)	Hypopygium extending to apex of gaster; ovipositor always strongly exerted, the exerted part at least one-third as long as gaster . . . . .	<b>*PROCHILONEURUS</b> Silvestri (p. 327)
–	Hypopygium not extending more than three-quarters along gaster; either ovipositor not or hardly exerted, or if strongly so then hypopygium hardly extends more than half way along gaster . . . . .	<b>CHEILONEURUS</b> (p. 249)
104 (8)	Forewing with a pattern of infusate rays or bands . . . . .	105
–	Forewing hyaline or more or less uniformly infusate with one or two hyaline spots or bands, not with infusate rays or bands . . . . .	109
105 (104)	Forewing with one or two longitudinal infusate rays (Fig. 303) . . . . .	<b>COMPERIELLA</b> (p. 256)
–	Forewing with one or two fuscous fasciae or with several fuscous lines radiating from a longitudinal fuscous line in centre of wing between which are wedge-shaped hyaline spots (Fig. 292) . . . . .	106
106 (105)	Hypopygium reaching apex of gaster; mandible bidentate . . . . .	107
–	Hypopygium not reaching more than half way along gaster; mandible with three teeth . . . . .	108
107 (106)	Forewing with a central longitudinal fuscous line from which radiate several fuscous lines between which are wedge-shaped triangular spots; scape more or less rectangular in profile . . . . .	<b>XENANUSIA</b> (p. 347)
–	Forewing with fuscous fasciae; scape triangular in profile . . . . .	<b>EPANUSIA</b> (p. 271)
108 (106)	Scape triangular in shape (Fig. 289); submarginal vein of forewing without a subapical triangular expansion (Fig. 290) . . . . .	<b>CERAPTEROCEROIDES</b> (p. 245)

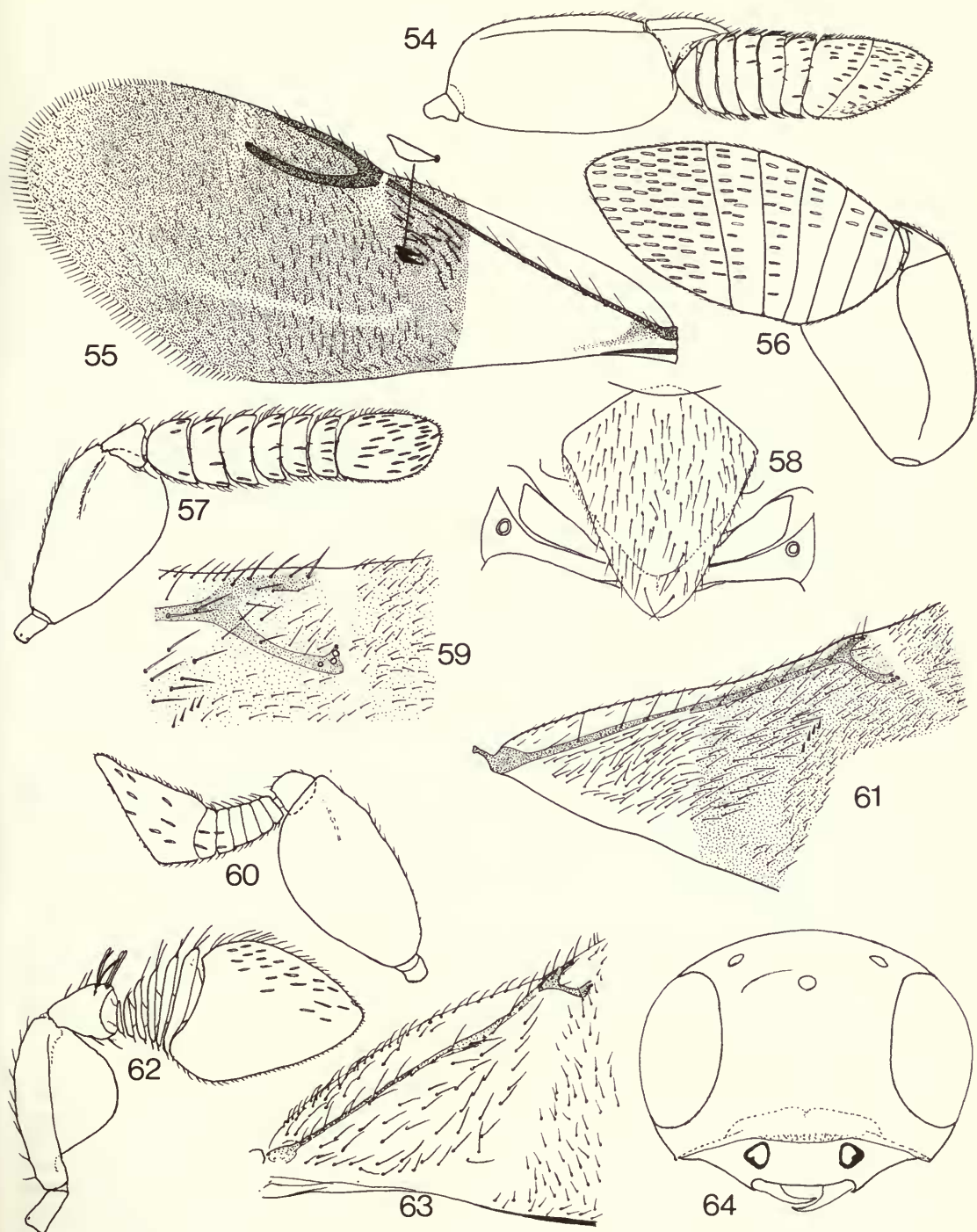
\*Not to be confused with *Procheiloneurus* Girault (p. 326)

**Figs 42–53** 42, 43, *Hypergonatopus hawaiiensis* (Perkins), (42) pronotum, mesoscutum and scutellum, dorsal aspect (from card-mounted specimen), ♀, (43) left antenna, outer aspect (from card-mounted specimen), ♀; 44, 45, *Xenoencyrtus niger* Riek, (44) pronotum, mesoscutum and scutellum, dorsal aspect, ♀, (45) right antenna, outer aspect, ♀; 46, *Lakshaphagus daulai* (Shafee, Alam & Agarwal), scutellum, dorsal aspect (from card-mounted specimen), ♀; 47, *Cheiloneurus pyrrillae* Mani, scutellum, dorsal aspect, ♀; 48, *Habrolepis rouxi* Compere, scutellum, dorsal aspect, ♀; 49, *Zaomma* sp., base of right forewing, upper surface, ♀; 50, *Cheiloneurus* sp., base of right forewing, upper surface (from card-mounted specimen), ♀; 51, *Eusemion cornigerum* (Walker), right antenna, outer aspect, ♀; 52, *Anicetus integrellus* Trjapitzin, left antenna, outer aspect, ♀; 53, *Leurocerus hongkongensis* Subba Rao, right antenna, outer aspect, ♀.



- Scape more or less rectangular with dorsal and ventral margins subparallel; submarginal vein of forewing with a subapical triangular expansion (Fig. 291) **CERAPTEROCERUS** (p. 245)
- 109 (104) Hypopygium not reaching more than about two-thirds along gaster; mandible with two teeth and a truncation, or three or four teeth ..... 110
- Hypopygium reaching apex of gaster; mandible with two, rarely three, teeth .. 114
- 110 (109) Forewing hyaline ..... **NEOCLADELLA** (p. 305)
- Forewing darkened ..... 111
- 111 (110) Body dark and metallic, not yellow or orange ..... 112
- At least head and thorax largely yellow or orange ..... 113
- 112 (111) Forewing entirely infusate, the infuscation gradually fading towards apex of wing; clava entire (Fig. 53); marginal vein of forewing punctiform **LEUROCERUS** (p. 293)
- Forewing with apex broadly hyaline; clava three-segmented (Fig. 51); marginal vein of forewing more than twice as long as broad ..... **EUSEMION** (p. 277)
- 113 (111) Scape tending to be subrectangular, the flattened part of upper edge more than one-half as long as the straight part of the lower edge . . **PARACERAPTROCERUS** (p. 315)
- Scape tending to be triangular, the flattened part of the upper edge less than half as long as the straight part of the lower edge (Fig. 52) ..... **ANICETUS** (p. 231)
- 114 (109) Forewing with postmarginal vein well developed, at most only about one-third shorter than stigmal; pedicel usually longer and broader than first funicle segment ..... 115
- Forewing with postmarginal vein very short or absent; pedicel narrower than and at most about as long as first funicle segment ..... 117
- 115 (114) Forewing with basal cell as densely and as evenly hairy as disc, linea calva closed towards posterior margin, wing with a well-defined but irregular pattern; thorax with punctate-reticulate sculpture and matt; facial carina dorsally with two or three lines of very short, white squamous hairs . . . **CERAPTROCERELLA** (p. 246)
- Forewing with basal cell naked proximally, linea calva more or less open posteriorly (Fig. 55), wing more or less evenly infusate except in proximal one-quarter where it is more or less hyaline; thorax with very shallow sculpture and slightly to very shiny; facial carina without a distinct line of pale setae dorsally ..... 116
- 116 (115) Forewing with proximal margin of linea calva with at least a few flattened scale-like setae (Fig. 55); antennal flagellum in profile with subparallel sides (Fig. 54) ..... **CHRYSOPLATYCERUS** (p. 250)
- Forewing with proximal margin of linea calva without any flattened scale-like setae; antennal flagellum distinctly oval in profile (Fig. 56) . . . **NEOPLATYCERUS** (p. 306)
- 117 (114) Scutellum with a distinct, thin apical flange (Fig. 58); pedicel only slightly shorter than first funicle segment, clava solid (Fig. 57) . . . . **PRALEUROCERUS** (p. 325)
- Scutellum without a distinct apical flange; pedicel very small, much shorter than first funicle segment, clava three-segmented ..... 118
- 118 (117) Head prognathous and in frontal view elongate, nearly one-half longer than broad ..... **MONSTRANUSIA** (p. 300)
- Head hypognathous and in frontal view about as long as broad ..... 119
- 119 (118) First funicle segment at least three times as broad as pedicel which is triangularly flattened, the distal segments narrowing but still at least about twice as wide as pedicel; forewing with postmarginal vein very short, almost absent **CRYPTANUSIA** (p. 262)
- First funicle segment subequal in size to sixth, both much less than twice as

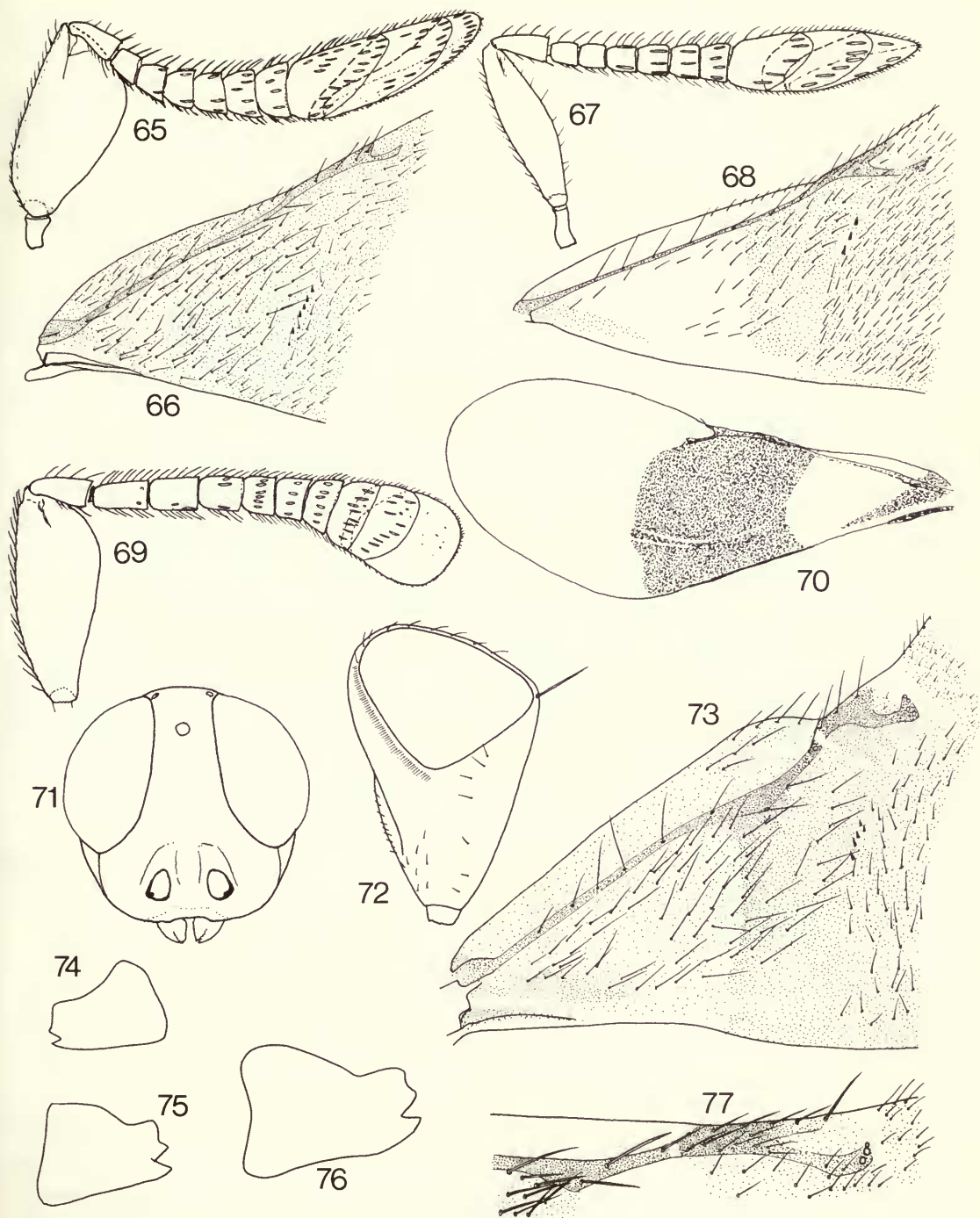
**Figs 54–64** 54, 55, *Chrysoplatycerus splendens* (Howard), (54) right antenna, outer aspect, ♀ (55) left forewing, upper surface, ♀; 56, *Neoplatycerus* sp., left antenna, outer aspect (from card-mounted specimen), ♀; 57, 58, *Praleurocerus viridis* (Agarwal), (57) right antenna, outer aspect, ♀, (58) scutellum and propodeum, dorsal aspect, ♀; 59, 60, *Proleurocerus fulgoridis* Ferrière, (59) apex of right forewing venation, upper surface, ♀, (60) right antenna, inner aspect, ♀; 61, *Zozoros sinemarginis* sp. n., base of right forewing, upper surface, ♀; 62–64, *Hambletonia pseudococcina* Compere, (62) right antenna, outer aspect, ♀, (63) base of right forewing, upper surface, ♀, (64) head, dorso-frontal aspect, ♀.



- broad as pedicel which is subconical; forewing with postmarginal vein at least about half as long as stigmal . . . . . **PARECTROMOIDEA** (p. 319)
- 120 (10) Forewing either with marginal vein absent, the postmarginal and stigmal veins emitted from apex of submarginal with postmarginal vein not touching margin of wing, or marginal vein punctiform (or occasionally slightly longer than broad) and apex of stigmal vein joined to apex of postmarginal vein by a distinct, often hyaline, hairless streak (Figs 59, 61, 63) . . . . . 121
- Forewing either with marginal vein distinctly longer than broad or with marginal vein punctiform (or slightly longer than broad) and without distinct naked streak from apex of postmarginal vein to apex of stigmal vein . . . . . 125
- 121 (120) Clava shorter than funicle, about as long as preceding three funicle segments together . . . . . **PENTELICUS** (p. 322)
- Clava at least as long as funicle, usually longer . . . . . 122
- 122 (121) Pedicel with a few conspicuous long scale-like setae, clava large and oval (Fig. 63); facial impression margined above by a sharp ridge (Fig. 64) . . . . . **HAMBLETONIA** (p. 282)
- Pedicel with normal setae, clava not oval; facial impression at most with a rounded edge . . . . . 123
- 123 (122) Head smooth with very fine punctures; mandible bidentate . . . . . **LUTHERISCA** (p. 294)
- Head with deep, conspicuous piliferous punctures; mandible with three teeth . . . . . 124
- 124 (123) Clava solid, funicle segments not less than twice as broad as long (Fig. 60); body wholly dark and metallic, not partly yellow-brown . . . . . **PROLEUROCERUS** (p. 328)
- Clava three-segmented, funicle segments from slightly transverse to clearly longer than broad (Fig. 65); body partly yellow-brown . . . . . **ZOZOROS** (p. 350)
- 125 (120) Exserted part of ovipositor at least about one-third length of gaster . . . . . **\*PROCHILONEURUS** Silvestri (p. 327)
- Ovipositor not or hardly exserted . . . . . 126
- 126 (125) All funicle segments broader than long . . . . . 127
- Not all funicle segments broader than long, at least first funicle segment longer than broad . . . . . 132
- 127 (126) Hypopygium extending to apex of gaster; forewing with marginal vein shorter than stigmal . . . . . 128
- Hypopygium not extending to apex of gaster; forewing with marginal vein at least a little longer than stigmal . . . . . 130
- 128 (127) Head and dorsum of thorax with fine punctate-reticulate sculpture and of matt or velvety appearance; facial impression bordered above by a very strong, almost straight transverse carina extending from gena to gena; pedicel dorsally flattened and shiny . . . . . **CERAPTROCERELLA** (p. 246)
- Head and dorsum of thorax with shallow reticulate and shallow to moderately deep piliferous punctures which often give a thimble-like appearance; face without a strong transverse carina (although antennal scrobes may be very sharply margined); pedicel not flattened dorsally and not shiny . . . . . 129
- 129 (128) Frontovortex one-sixth to one-third head width, head with punctures descending at least some way between eye and facial impression; mandible bidentate . . . . . **AENASIUS** (p. 225)
- Frontovortex less than one-sixth head width, head only with fine punctures between eye and facial impression; mandible tridentate . . . . . **NEODISCODES** (p. 306)

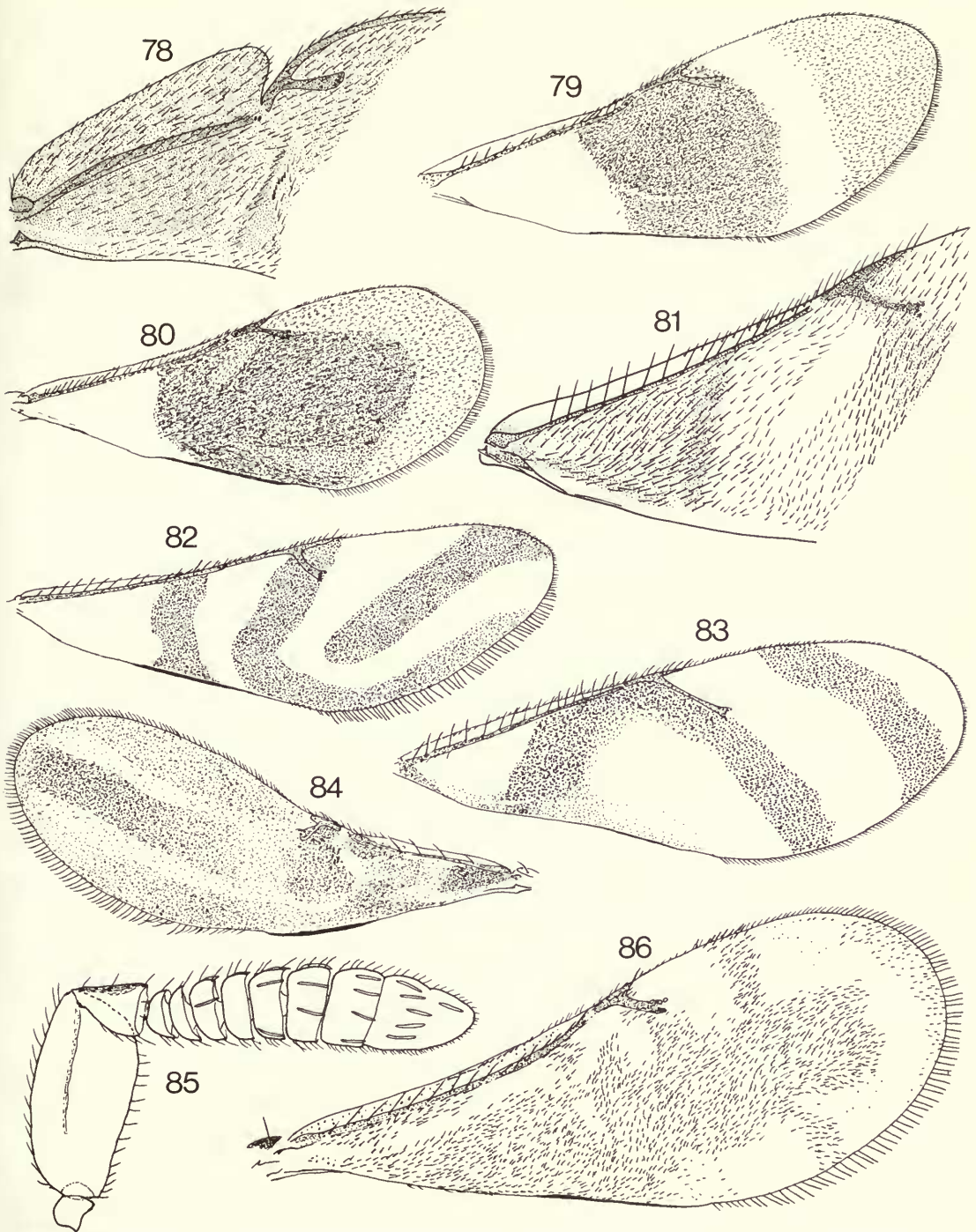
\* Not to be confused with *Procheiloneurus* Girault (p. 326)

**Figs 65–77** 65, *Zozoros sinemarginis* sp. n., right antenna, outer aspect, ♀; 66, *Doddanusia* sp., base of right forewing, upper surface, ♀; 67, 68, *Ovaloencyrtus fijiensis* sp. n., (67) right antenna, outer aspect, ♀, (68) base of right forewing, upper surface, ♀; 69–71, *Paratetratrophidea* sp., (69) right antenna, outer aspect, ♀, (70) left forewing showing pattern and relative strength of infuscation, ♀, (71) head, frontal aspect, ♀; 72, *Epitetracnemus zetterstedtii* (Westwood), head, aspect from left side, ♀; 73, *Paksimmondsius pakistanensis* Ahmad & Ghani, base of right forewing, upper surface, ♀; 74, *Psyllaephagus worcesteri* (Girault), left mandible, ♀; 75, *Psyllaephagus dyari* (Girault), right mandible, ♀; 76, *Aenasiella brachyscelidis* Girault, right mandible, ♀; 77, *Lakshaphagus hautefeuillei* (Mahdihassan), apex of right forewing venation, upper surface, ♀.



- 130 (127) Thorax, excluding legs, entirely dark and metallic ..... **NEBLATTICIDA** (p. 304)  
 – Thorax, excluding legs, largely yellow or orange ..... 131
- 131 (130) Forewing generally suffused pale brown without any hyaline areas, although occasionally paler towards apex of wing, marginal vein less than twice as long as stigmal, filum spinosum in posterior half of wing (Fig. 66) ..... **DODDANUSIA** (p. 265)  
 – Forewing with at least proximal one-third hyaline, distally strongly infusate but usually with some paler areas at apex of venation, on opposite side of wing and at apex of wing, marginal vein at least twice as long as stigmal, filum spinosum in anterior half of wing ..... **CHEILONEURUS** (p. 249)
- 132 (126) Frontovertex very narrow, less than one-tenth head width; head and thorax with fine punctate sculpture and silvery white recumbent hairs; funicle with some white segments; forewing infusate with a curved hyaline band distad of venation, disc of forewing densely setose proximad of linea calva .... **COMPERIA** (p. 256)  
 – Frontovertex at least about one-seventh of head width; head and thorax smooth or with shallow reticulate sculpture and brownish setae; forewing with a fuscous band in middle, paler or hyaline in basal one-third and distad of venation, disc of forewing proximad of linea calva with a large, bare area .... 133
- 133 (132) Clava about as long as funicle and apically pointed (Fig. 67); mid tibial spur shorter than basal mid tarsal segment; infuscation of forewing weak (Fig. 68); antennal scrobes long, much longer than toruli and meeting dorsally, not delimited laterally by a sharp carina ..... **OVALOENCYRTUS** (p. 310)  
 – Clava clearly much shorter than funicle and, although strongly truncate, with apex square (Fig. 69); mid tibial spur longer than basal mid tarsal segment; infuscation of forewing strong (Fig. 70); antennal scrobes not longer than toruli nor meeting dorsally, often delimited laterally by a sharp carina (Fig. 71) ..... **PARATETRALOPHIDEA** (p. 319)
- 134 (11) Costal cell of forewing abruptly narrowed at apex (Fig. 73); frontovertex with deep piliferous punctures ..... **PAKSIMMONDSIUS** (p. 312)  
 – Costal cell of forewing not abruptly narrowed at apex but gradually tapered; frontovertex without deep piliferous punctures ..... 135
- 135 (134) Scutellum with a thin apical flange ..... 136  
 – Scutellum without a distinct apical flange ..... 137
- 136 (135) Antennal clava white, longer than preceding three funicle segments combined ..... **HESPERENCYRTUS** (p. 286)  
 – Clava not white, not longer than preceding three funicle segments combined ..... **PARAPHAENODISCUS** (p. 317)
- 137 (135) Basal cell of forewing with two separate infusate areas, both areas clothed in dark setae, one adjacent to base of wing and the other adjacent to linea calva, the area between these appearing as a fascia of pale setae or completely naked; pronotum often with a pair of sublateral rectangular white spots ..... **\*PROCHEILONEURUS** Girault (p. 326)  
 – Basal cell of forewing otherwise and never with two areas of dark setae either side of a hyaline or naked area; pronotum never with a pair of sublateral white spots ..... 138
- 138 (137) Body (excluding legs, antennae, wings and tegulae) at least partly yellow or orange ..... 139  
 – Body (excluding legs, antennae, wings and tegulae) completely dark, not yellow or orange, although occasionally with a narrow yellowish area between metanotum and propodeum ..... 140
- 139 (138) Forewing with submarginal vein with a subapical triangular expansion (Fig. 77), wing usually uniformly infusate; antennal scrobes sharply bordered above and on sides ..... **LAKSHAPHAGUS** (p. 291)  
 – Forewing with submarginal vein without a subapical triangular expansion, wing usually with transverse hyaline bands that may occasionally be interrupted; antennal scrobes not deep and not sharply bordered ..... **MICROTERTYS** (p. 299)
- 140 (138) Head triangular in profile, strongly inflexed inwards at top of antennal scrobes

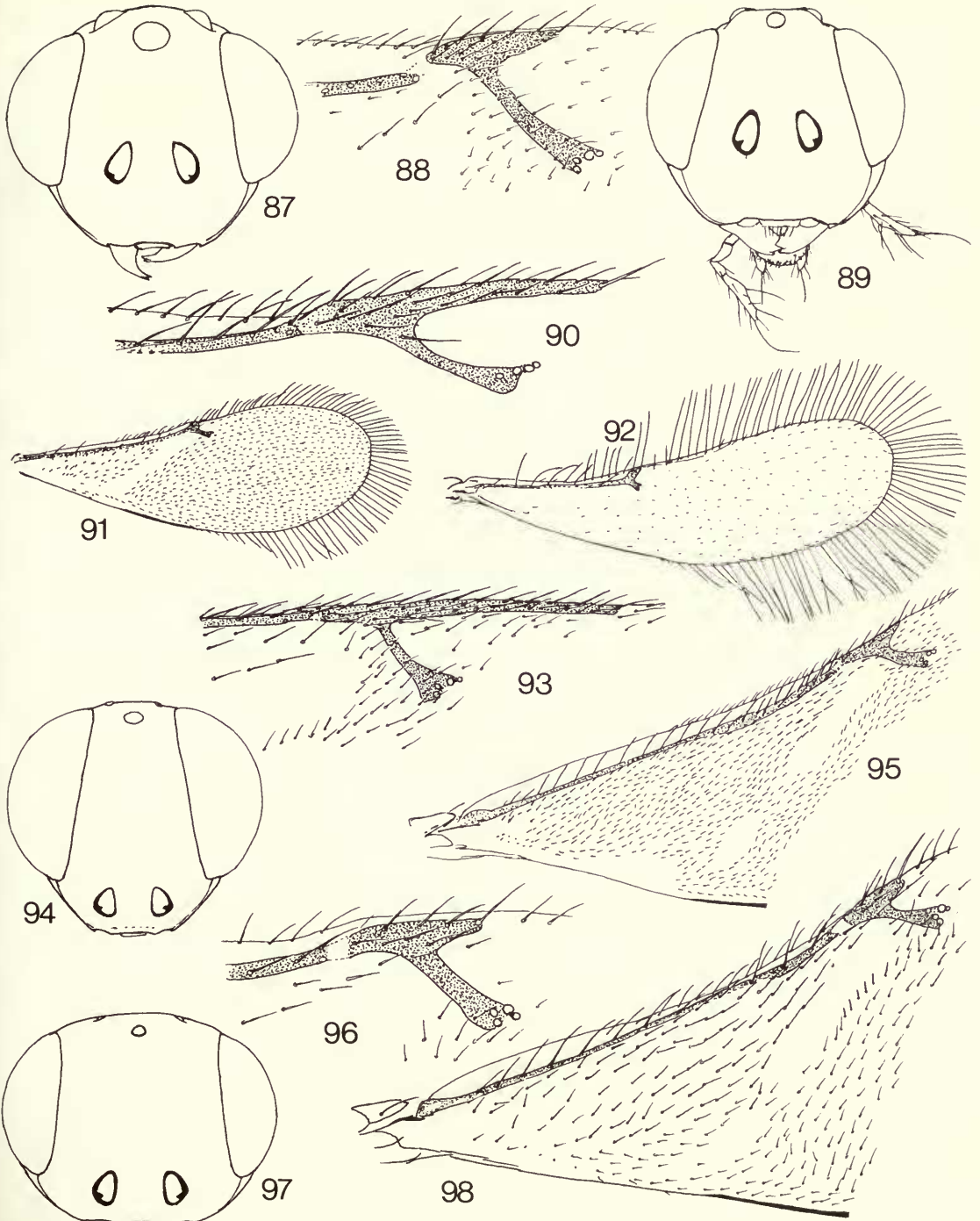
\* Not to be confused with *Prochiloneurus* Silvestri (p. 327)



Figs 78–86 78, *Eugahania ishiharai* Tachikawa, base of right forewing, upper surface, ♀; 79, *Parectromoidella lowelli* (Girault), right forewing, ♀; 80, *Cremesina* sp., right forewing, ♀; 81, *Tongyus nesus* sp. n., base of right forewing, upper surface, ♀; 82, *Yasumatsuiola* sp., right forewing showing pattern of infuscation, ♀; 83, *Holanusomyia pulchripennis* Girault, right forewing showing pattern of infuscation, ♀; 84, 85, *Gentakola trifasciata* (Saraswat), (84) left forewing, ♀, (85) right antenna, outer aspect, ♀; 86, *Anagyrietta* sp., right forewing, ♀.

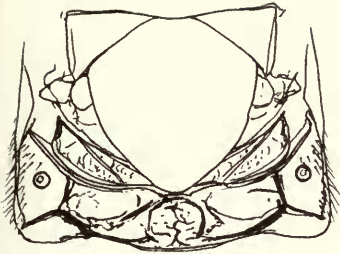
	(Fig. 72) and with a distinct transverse line of silvery white setae across face at this point and continuing below eyes . . . . .	<b>EPITETRACNEMUS</b> (p. 273)
–	Head in profile more or less gradually anteriorly rounded, not strongly inflexed inwards at top of antennal scrobes and without a distinct transverse line of silvery white setae . . . . .	141
141 (140)	Stigmal vein of forewing shorter than marginal vein . . . . .	<b>ZOOENCYRTUS</b> (p. 350)
–	Stigmal vein of forewing longer than marginal vein . . . . .	142
142 (141)	Mandible with one or two teeth and a truncation (Figs 74, 75); antenna usually with all funicle segments longer than broad, although rarely all subquadrate or transverse . . . . .	<b>PSYLLAEPHAGUS</b> (p. 330)
–	Mandible with three acute teeth (Fig. 76); not all funicle segments longer than broad . . . . .	<b>AENASIELLA</b> (p. 224)
143 (11)	Costal cell of forewing strongly excised at apex (Fig. 78) . . . . .	<b>EUGAHANIA</b> (p. 276)
–	Costal cell of forewing not or hardly excised at apex . . . . .	144
144 (143)	All funicle segments longer than broad; mandible always bidentate . . . . .	145
–	Not all funicle segments longer than broad; mandible occasionally bidentate, but usually otherwise . . . . .	151
145 (144)	Body (excluding legs) wholly dark and with silvery white setae, those on scutellum usually arranged in a distinct pattern . . . . .	<b>PARANATHRIX</b> (p. 317)
–	Body (excluding legs) at least partly yellow or red; setae on thorax not silvery white, or if so then those on scutellum are evenly distributed and not arranged in a distinct pattern . . . . .	146
146 (145)	Forewing with at least a broad fuscous band in middle one-third of wing but usually more extensively infusate (Figs 79, 80) and not with a pattern of dark and pale setae . . . . .	147
–	Either forewing less extensively infusate, the infuscation limited to one or two narrow fasciae or to basal one-third or to small areas below venation which do not extend more than one-third across wing, or wing with a distinct pattern of dark and pale setae . . . . .	148
147 (146)	Frontovertex relatively broad, at narrowest point only a little narrower than length of scape . . . . .	<b>CREMESINA</b> (p. 260)
–	Frontovertex relatively narrow, at narrowest point less than half as wide as length of scape . . . . .	<b>PARECTROMOIDEA</b> (p. 319)
148 (146)	Forewing with postmarginal vein longer than stigmal . . . . .	149
–	Forewing with postmarginal vein not longer than stigmal . . . . .	150
149 (148)	Forewing with one or two distinct fuscous bands . . . . .	<b>LEPTOMASTIDEA</b> (p. 292)
–	Forewing with infuscation limited to longitudinal streaks adjacent to venation . . . . .	<b>GYRANUSOIDEA</b> (p. 280)
150 (148)	Forewing with a distinct infusate area at base and a diffuse band from stigmal vein across wing (Fig. 81) and not with a pattern of dark and pale setae, remainder hyaline; flagellar segments clearly slightly flattened from side to side . . . . .	<b>TONGYUS</b> (p. 343)
–	Forewing more or less generally suffused pale fuscous or with only longitudinal infusate streaks adjacent to venation or with a pattern of dark and pale setae; flagellar segments cylindrical (N.B., if material has been dried from alcohol the flagellar segments may have collapsed giving a flattened appearance) . . . . .	<b>ANAGYRUS</b> (p. 229)
151 (144)	Eyes much shorter than minimum width of frontovertex . . . . .	152
–	Eyes not shorter than minimum width of frontovertex . . . . .	153

**Figs 87–98** 87, 88, *Alamella flava* Agarwal, (87) head, frontal aspect, ♀, (88) apex of right forewing venation, upper surface, ♀; 89, 90, *Philosindia longicornis* sp. n., (89) head, frontal aspect, ♀, (90) apex of right forewing venation, upper surface (discal setae omitted), ♀; 91, *Rhopus* sp., right forewing, ♀; 92, *Hamusencyrtus* sp., right forewing, ♀; 93, *Gyranusioidea phenacocci* (Beardsley), apex of right forewing venation, upper surface, ♀; 94, *Epidinocarsis californicus* (Compere), head, frontal aspect, ♀; 95, *Anagyrus swezeyi* Timberlake, base of right forewing, upper surface, ♀; 96, *Anagyrus antoninae* Timberlake, apex of right forewing venation, upper surface, ♀; 97, 98, *Doliphoceras nigricans* (Perkins), (97) head, frontal aspect, ♀, (98) base of right forewing, upper surface, ♀.

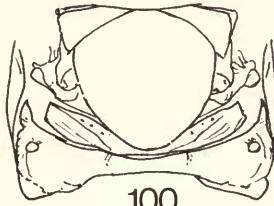


- 152 (151) Body foliaceously flattened; head prognathous; antennal toruli at mouth margin; pronotum longitudinally divided in middle (as in Fig. 38) . . . **PLATYRHOPUS** (p. 325)
- Body not foliaceously flattened; head opisthognathous; antennal toruli separated from mouth margin by more than their own lengths; pronotum entire  
**HUNTERELLUS** (p. 288)
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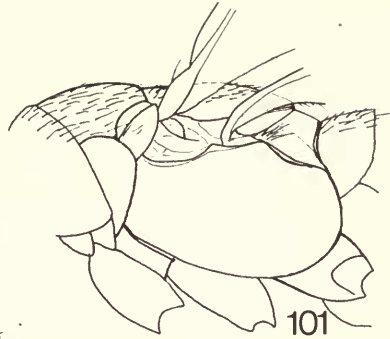
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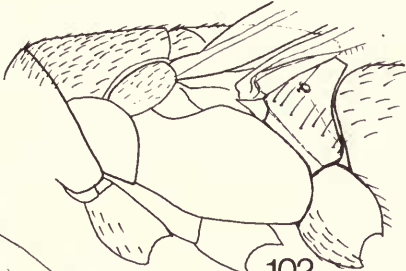
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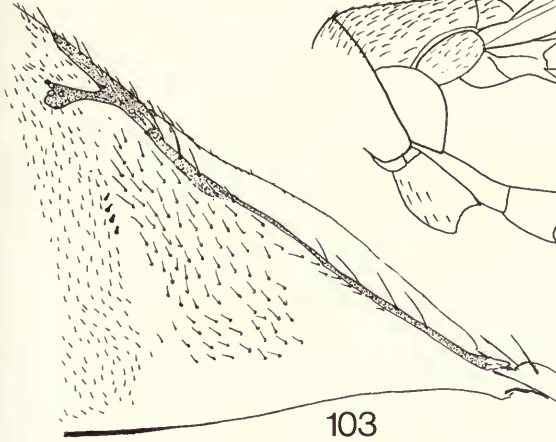
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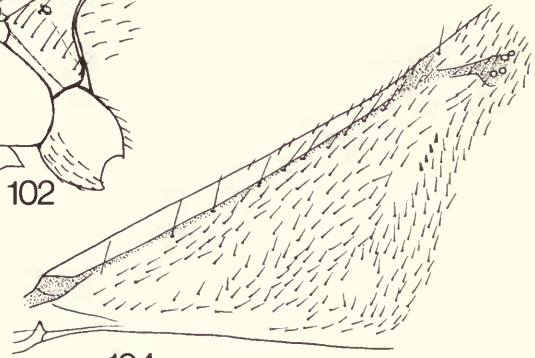
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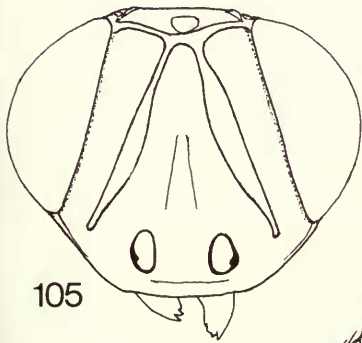
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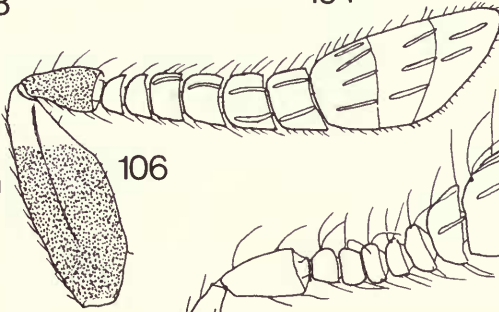
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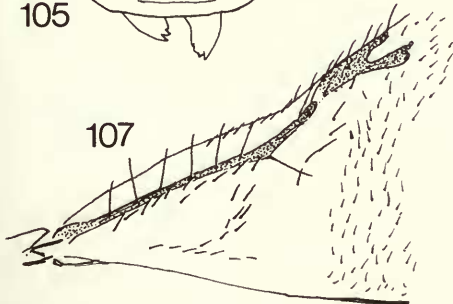
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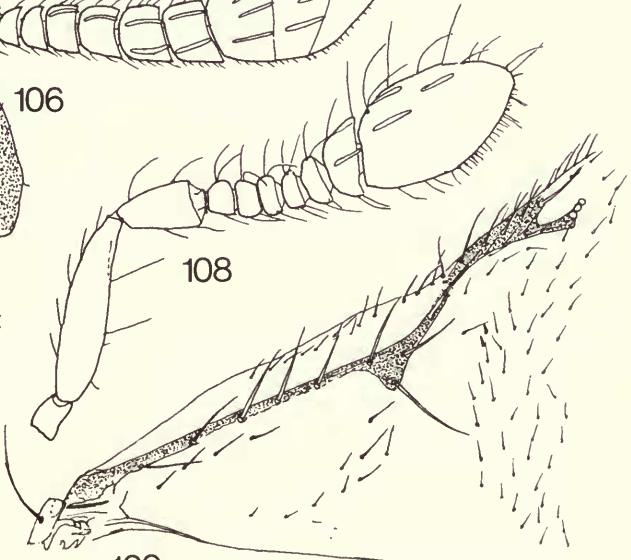
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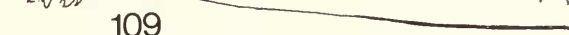
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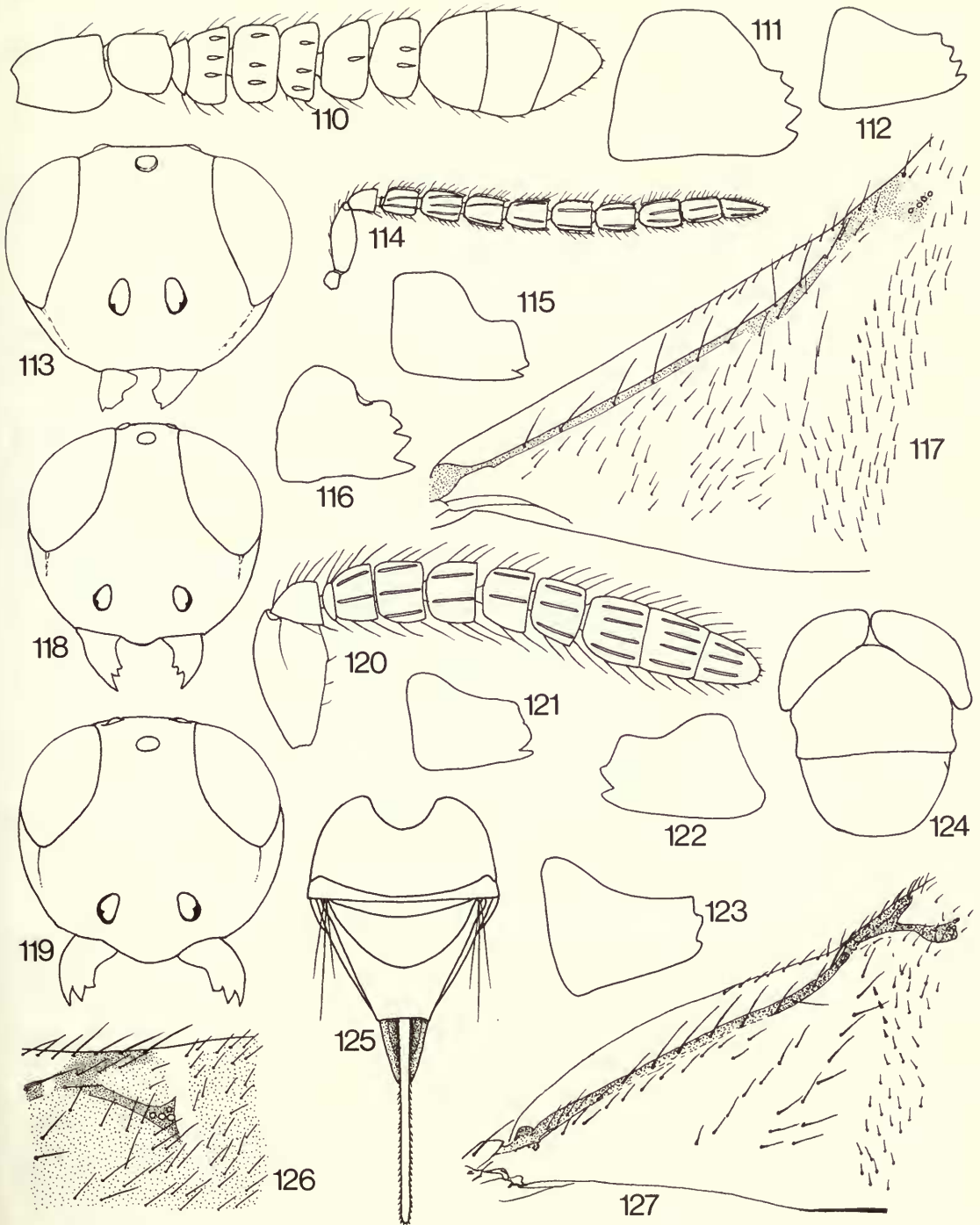
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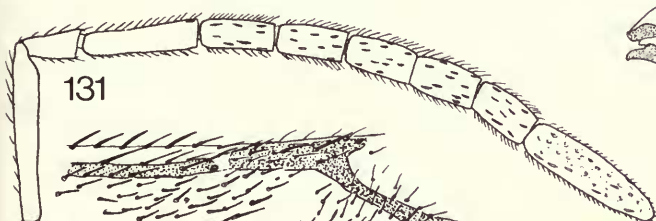
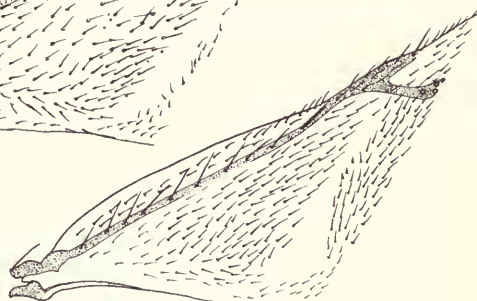
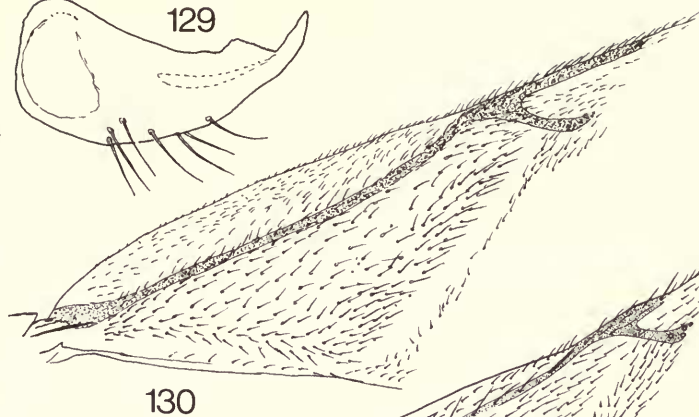
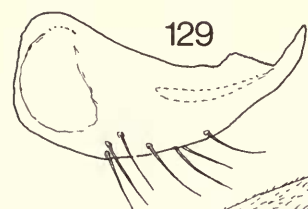
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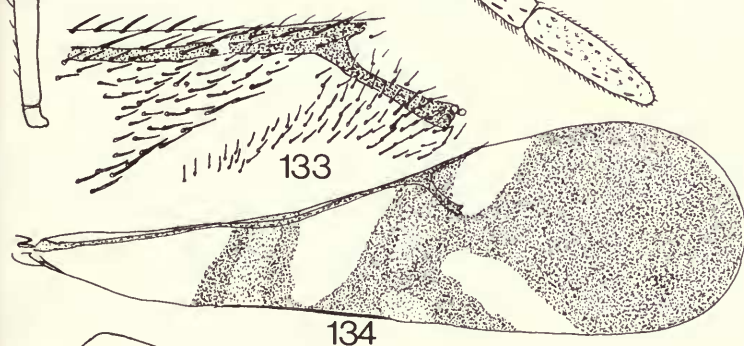


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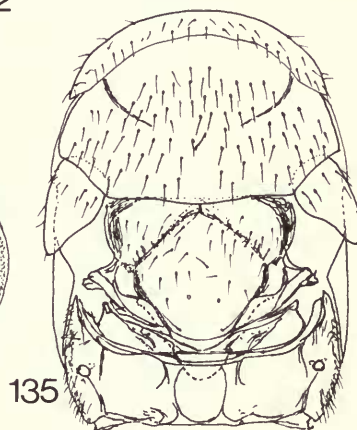
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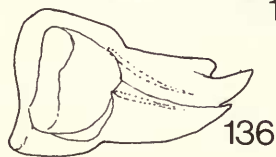
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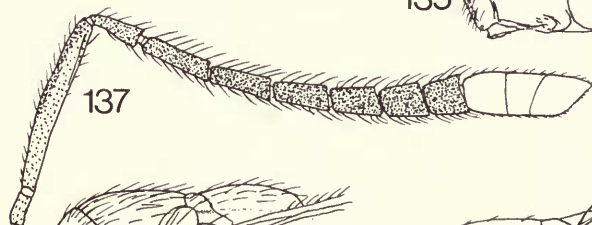
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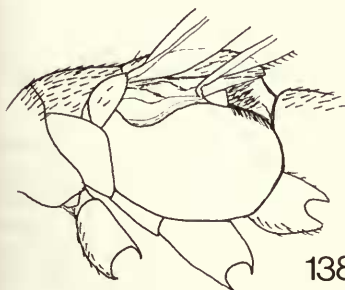
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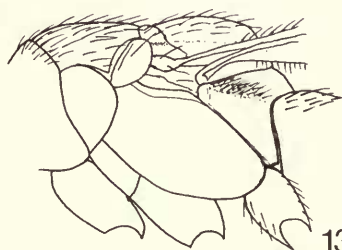
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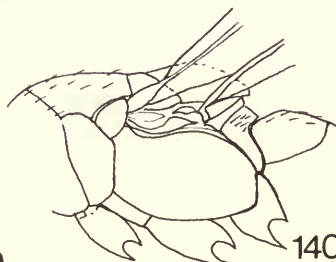
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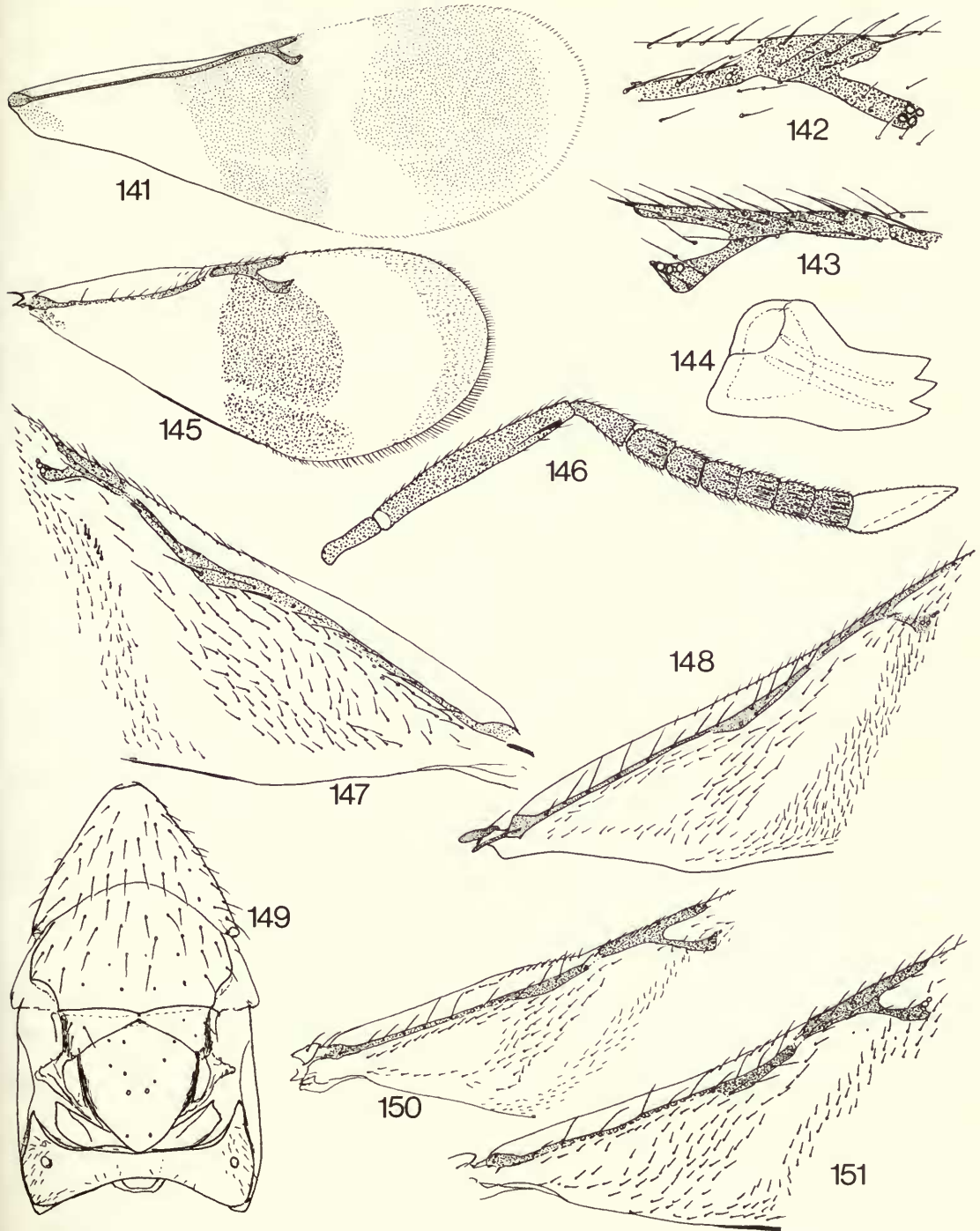
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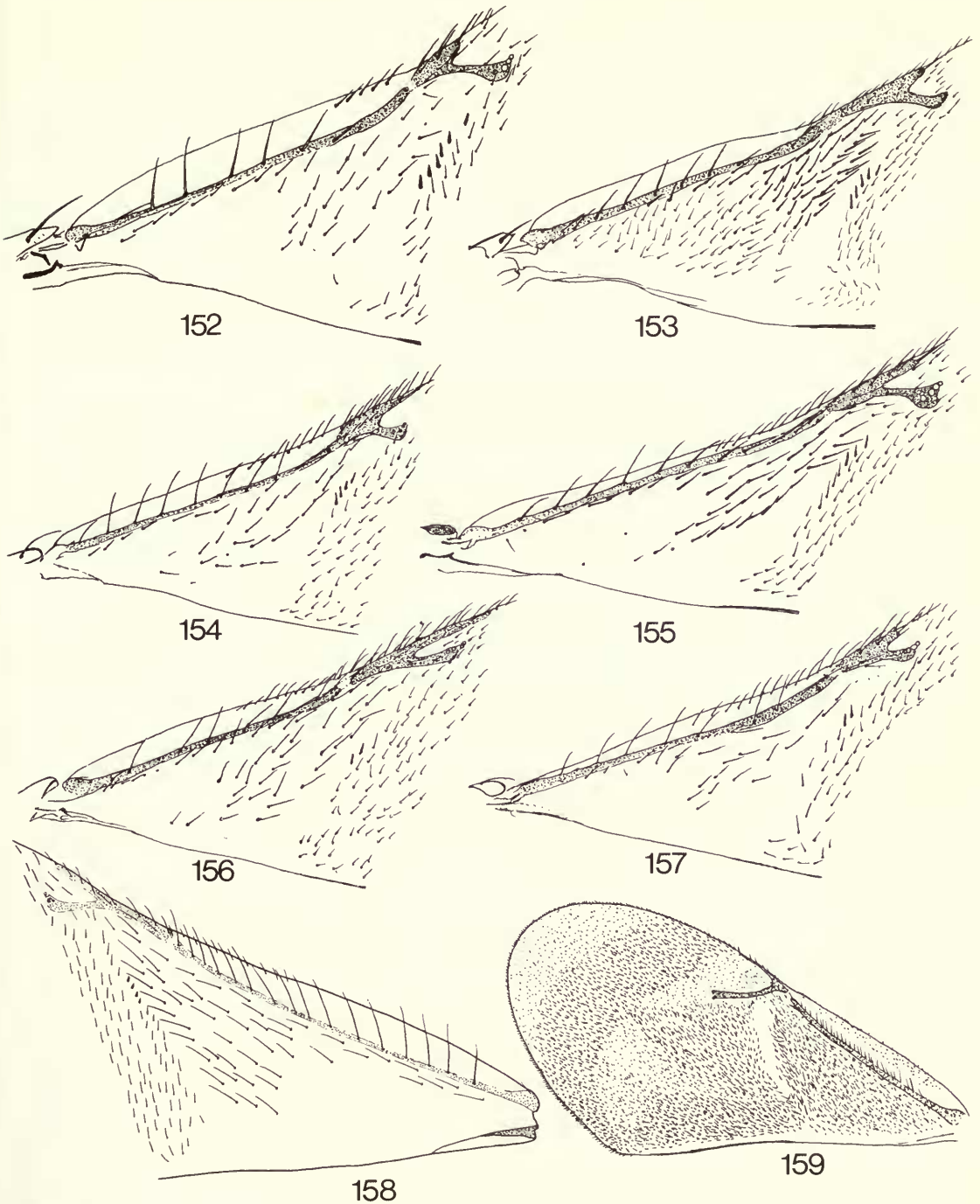
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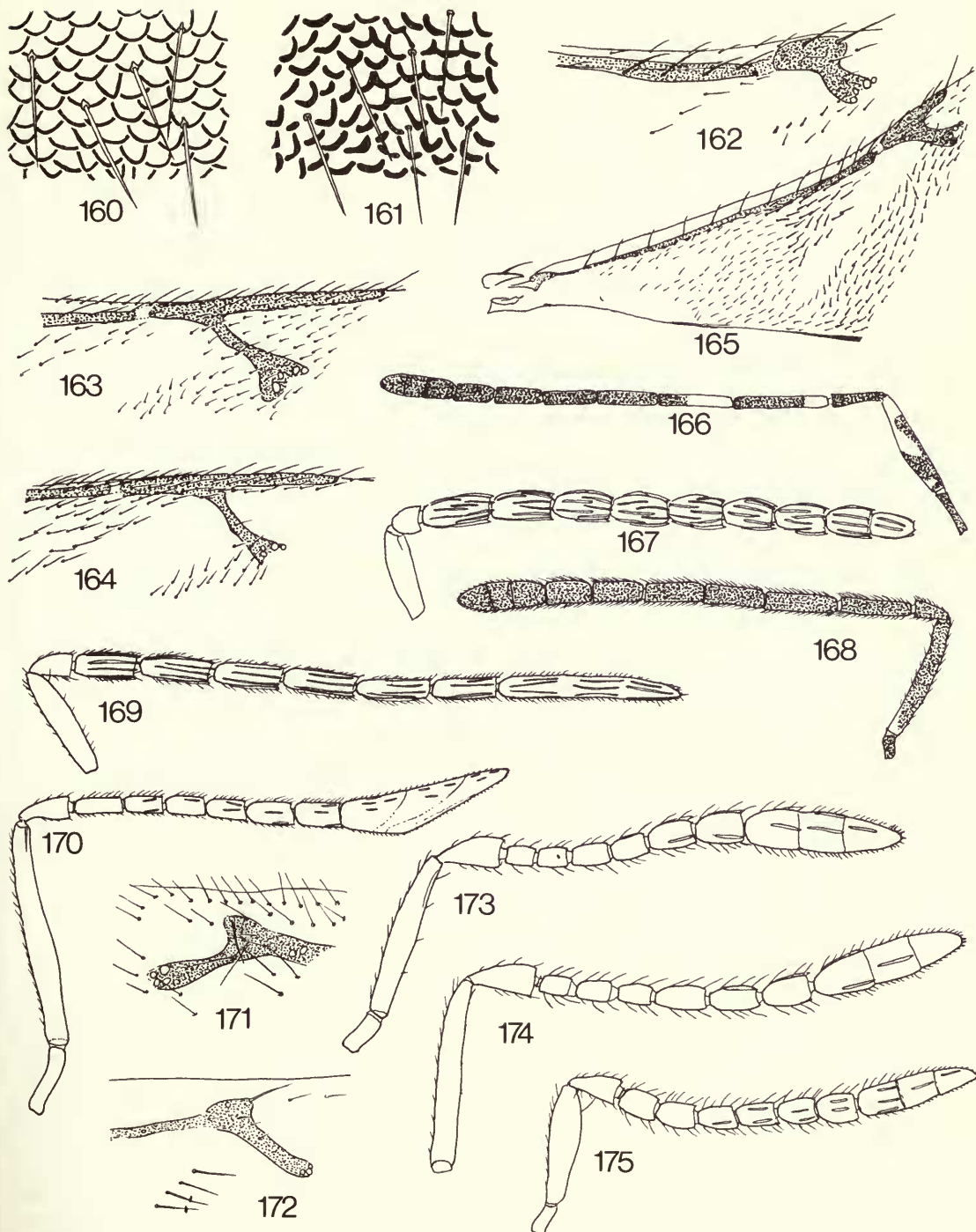
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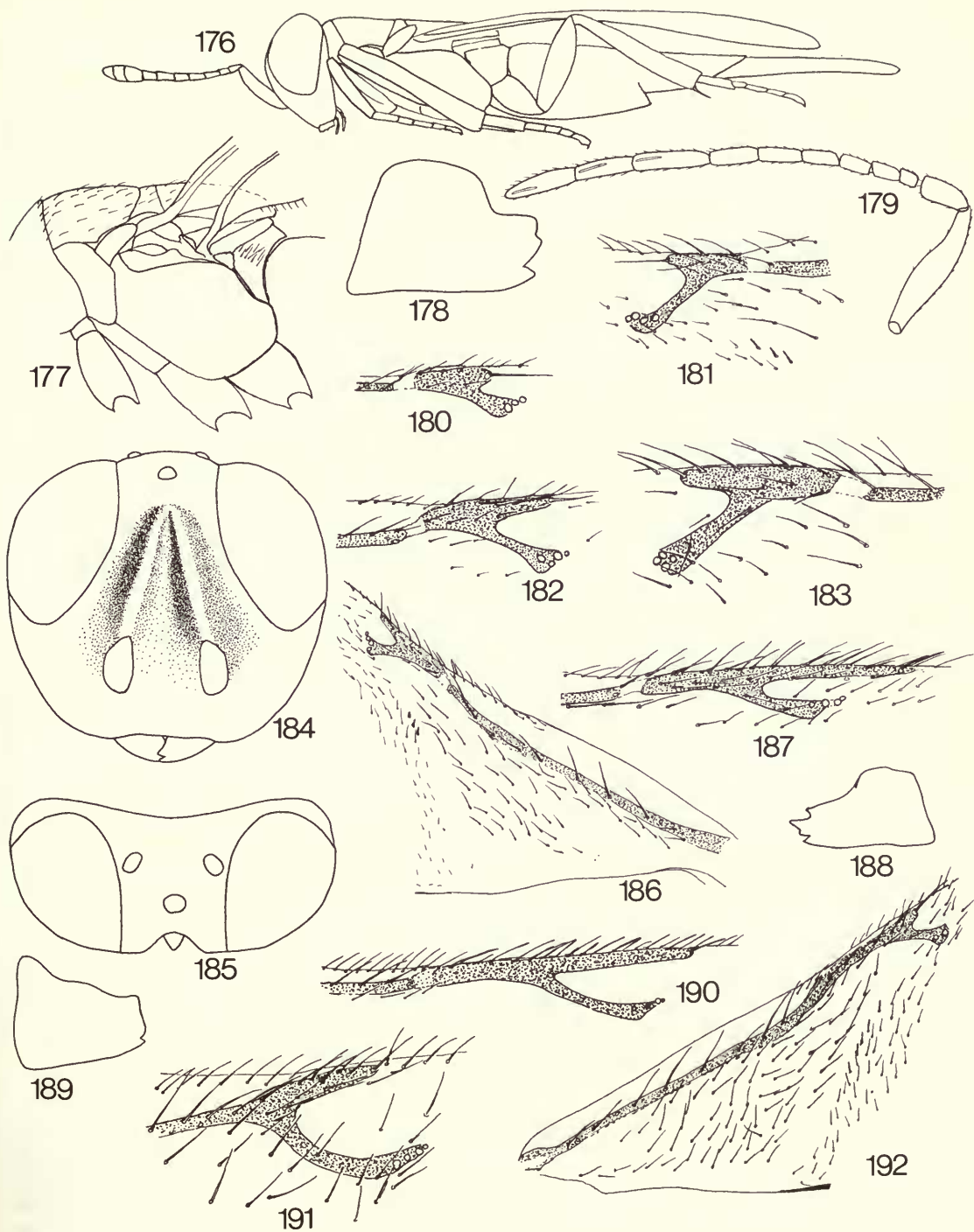
- Head and at least mesoscutum and mesopleurum with shallow reticulate sculpture and occasionally relatively deep piliferous punctures, but never, except on scutellum, with punctate sculpture, or if so then scutellum has a distinct apical flange; forewing with postmarginal vein usually not longer than stigmal, although occasionally longer ..... 210
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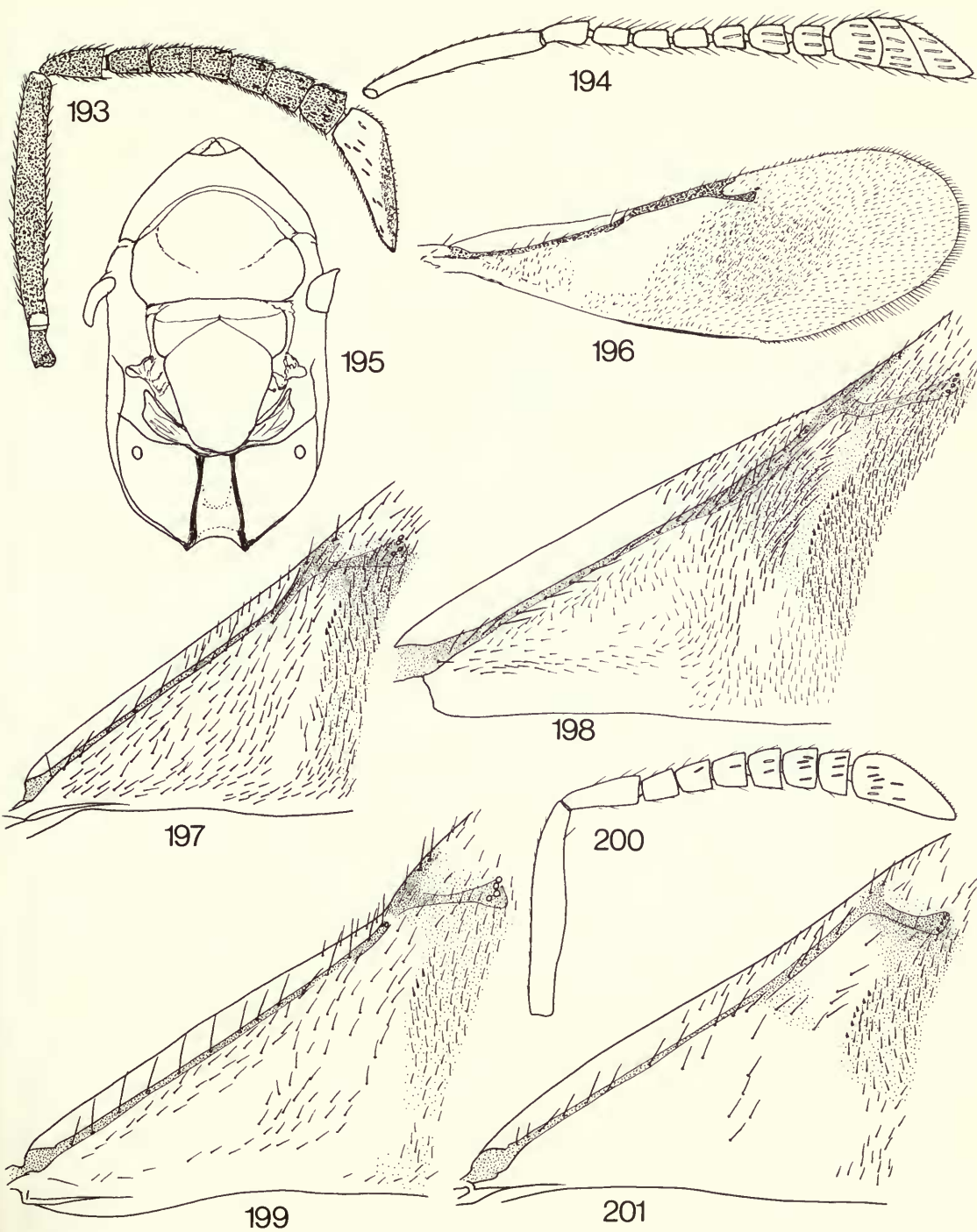
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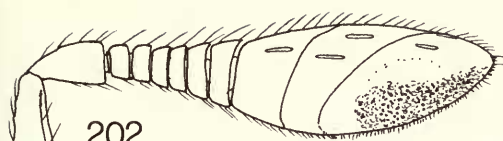


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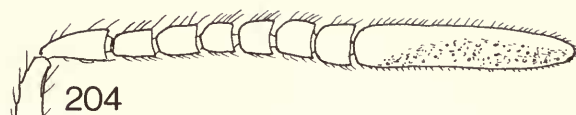
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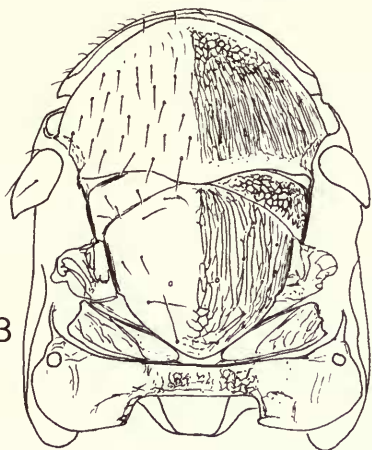




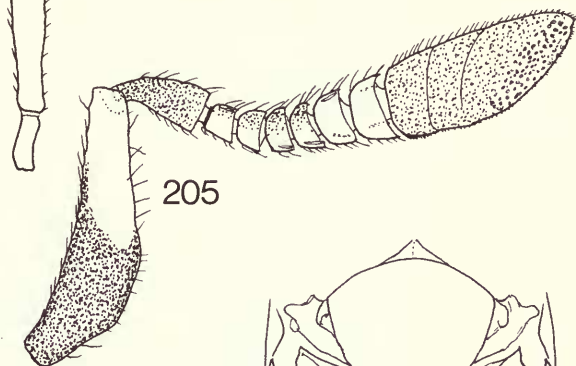
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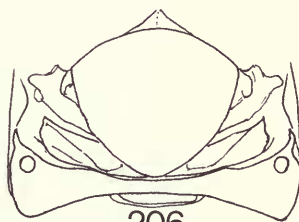
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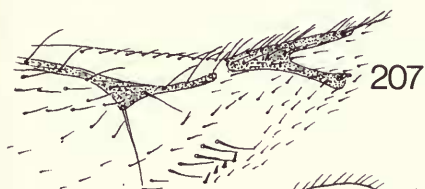
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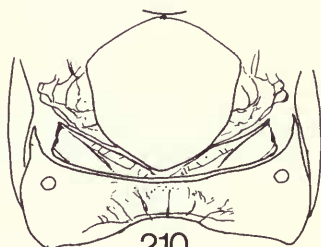
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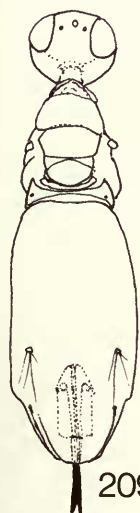
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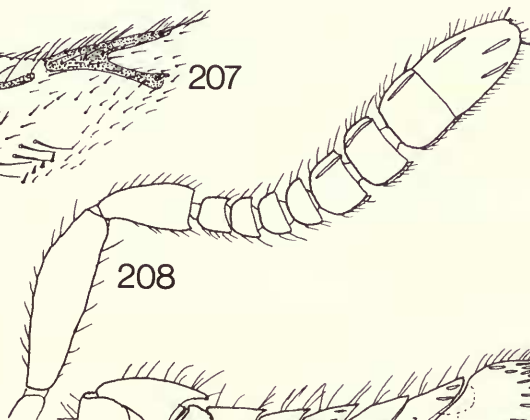
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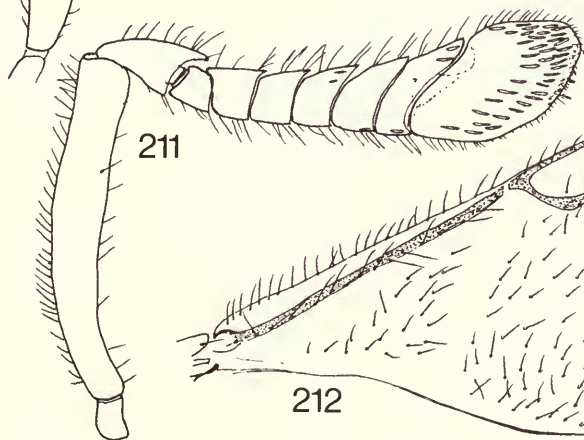
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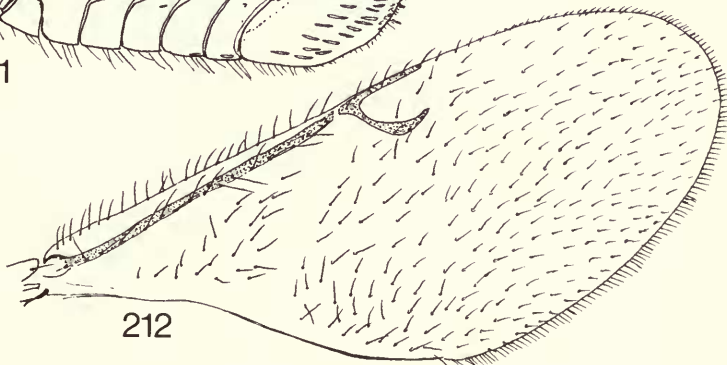
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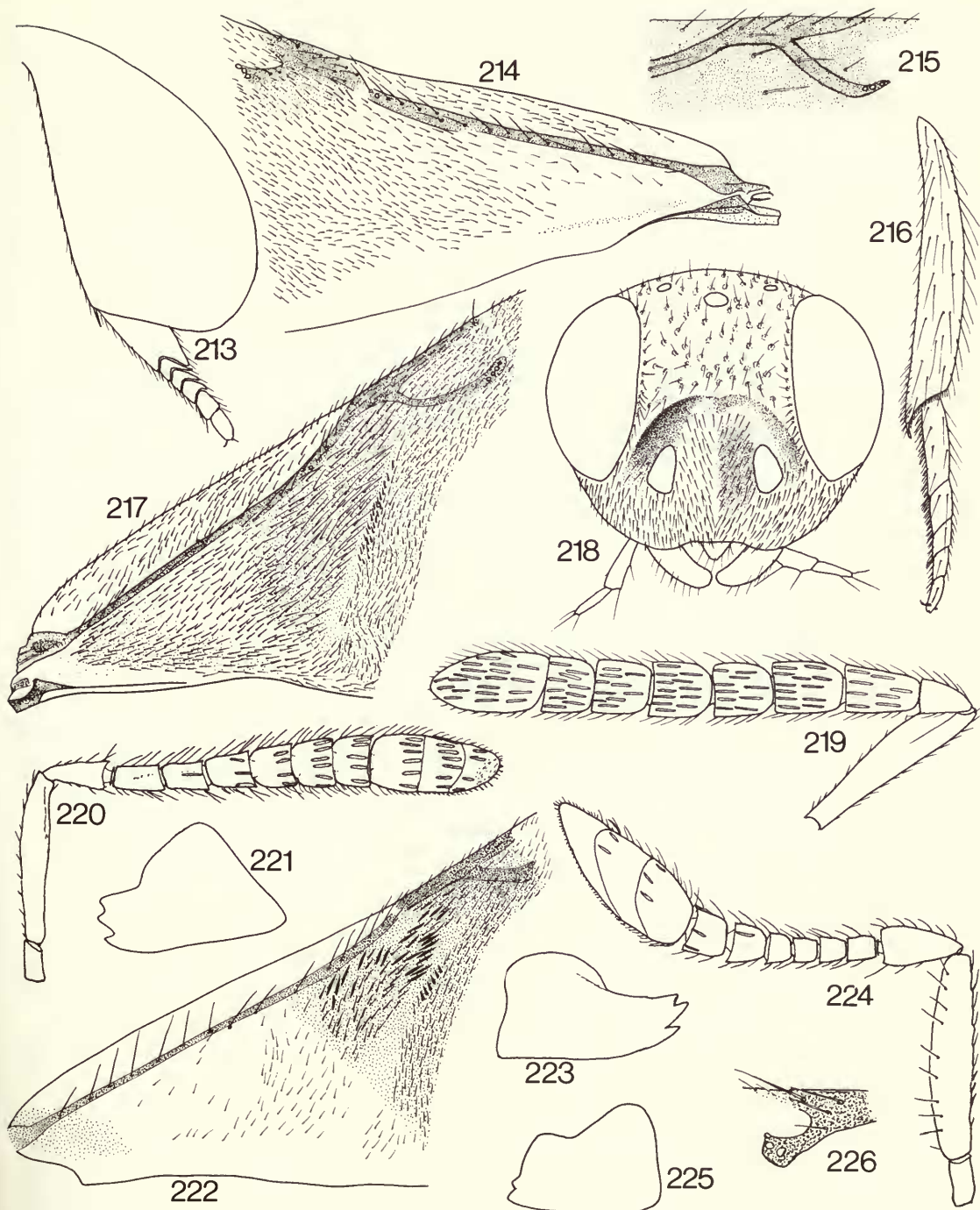


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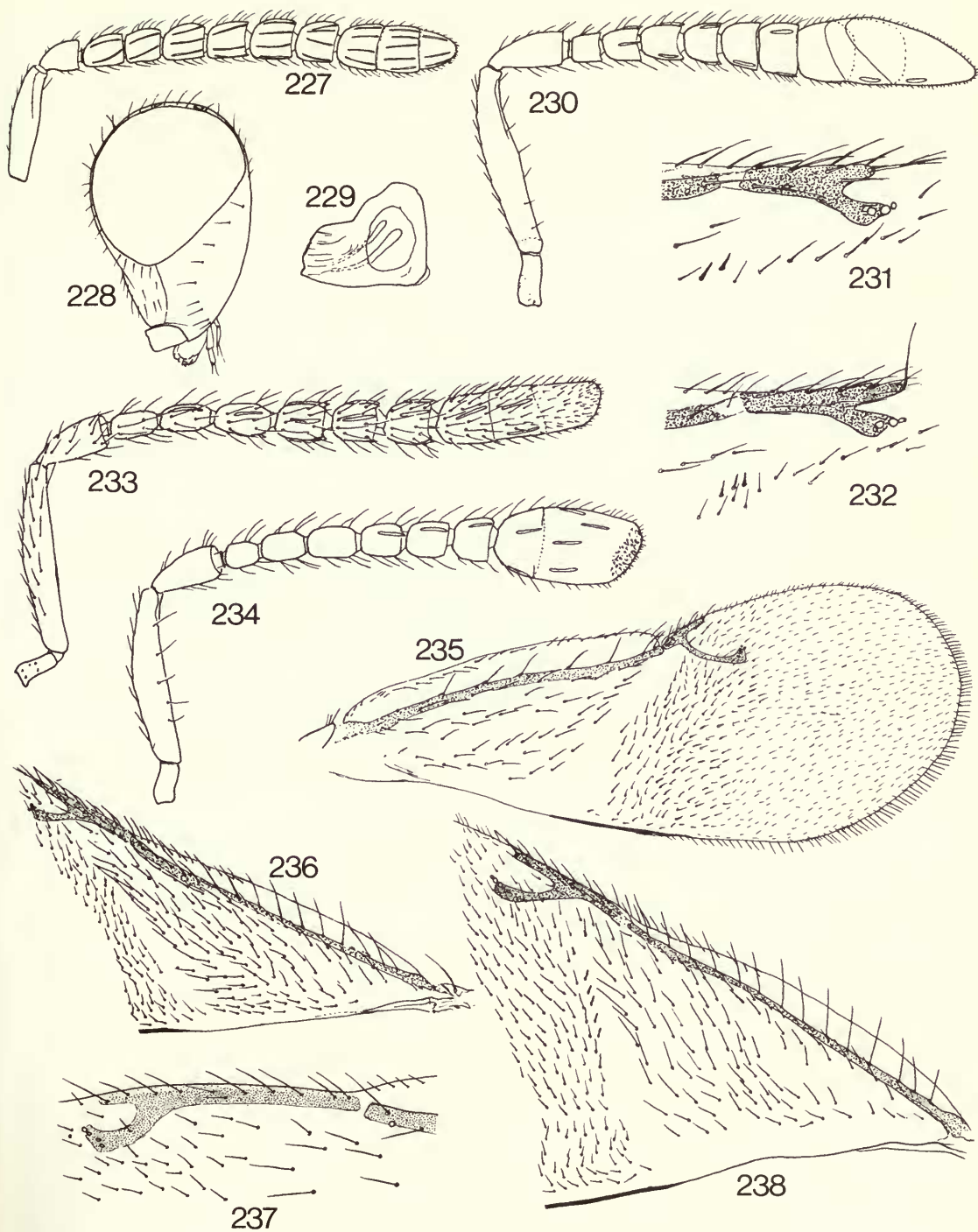
\* Not to be confused with *Procheiloneurus* Girault (p. 326)

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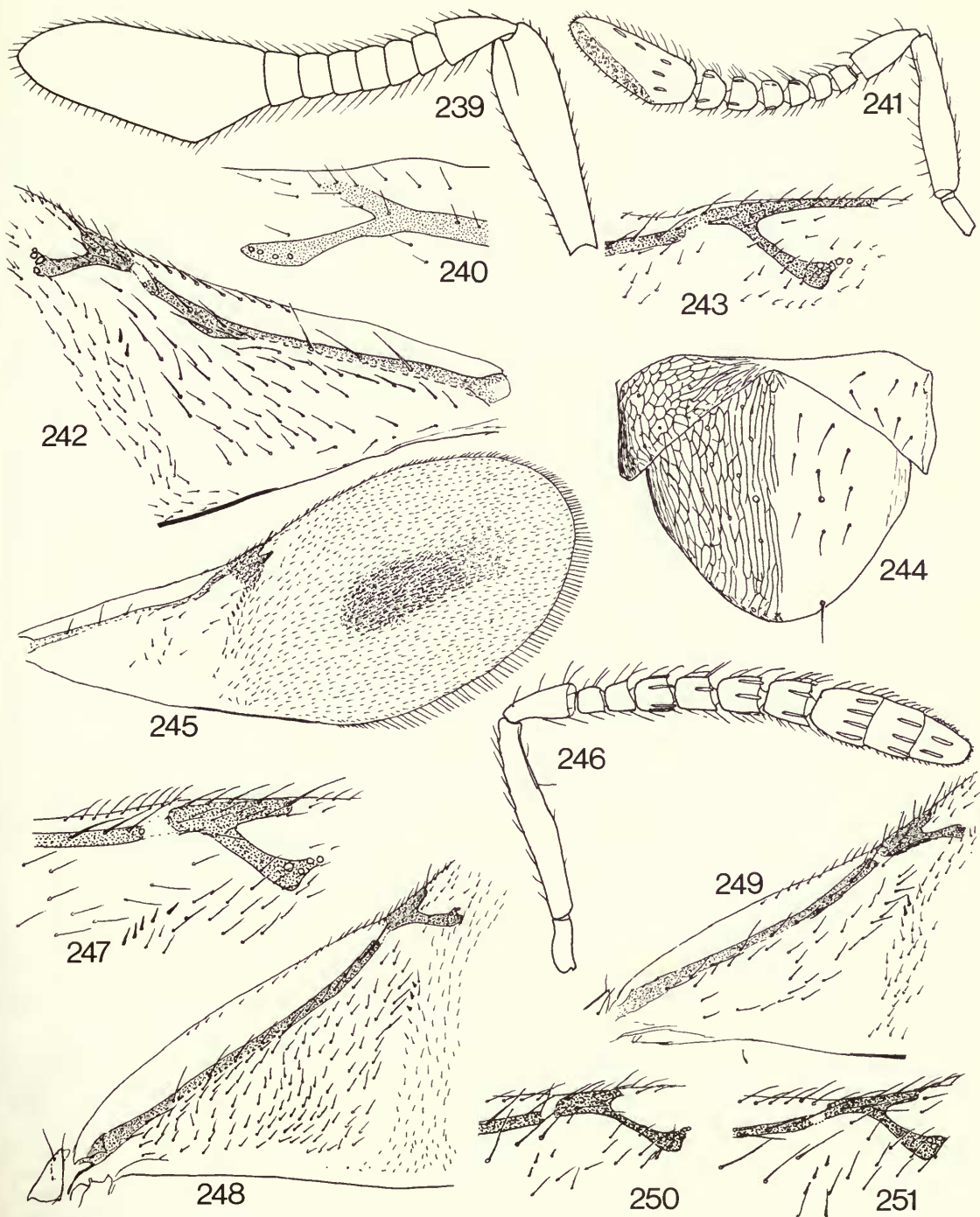
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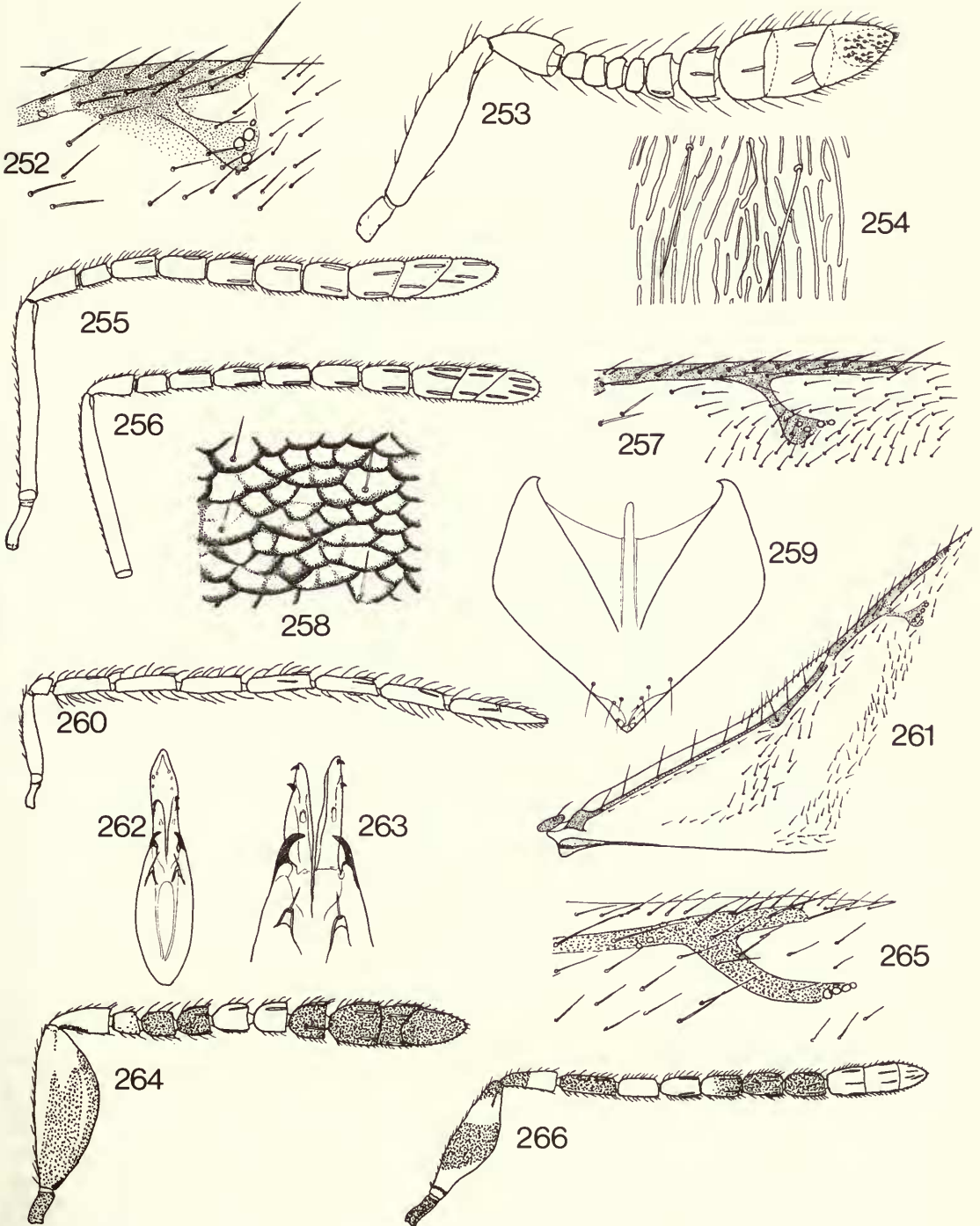
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- 274 (273) Clava entire (Fig. 169) ..... **ANOMALENCYRTUS** (p. 232)  
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- 275 (274) Either postmarginal vein or forewing as long or longer than stigmal (Figs 163, 164) or forewing relatively long and narrow and more than three times as long as broad ..... 276  
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- 277 (275) Flagellum widening towards clava so that clava is nearly twice as broad as first funicle segment (Figs 173, 174); gaster white or pale orange at base, thorax brown; ovipositor hardly as long as mid tibia ..... **BACALUSA** (p. 239)  
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- 278 (24) Forewing with postmarginal vein longer than stigmal ..... **PRIONOMASTIX** (p. 325)  
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- 279 (278) Forewing with marginal vein absent, stigmal vein arising from submarginal before it reaches anterior margin of wing (Figs 171, 172); frontovertex usually with distinct piliferous punctures giving it a thimble-like appearance ..... 280  
 – Forewing with marginal vein present; frontovertex without conspicuous piliferous punctures ..... 281
- 280 (279) Forewing with marginal fringe absent; mesoscutum with deep piliferous punctures giving it a thimble-like appearance; interantennal prominence normal; clava with apex more or less rounded ..... **HETEROCOCCIDOXENUS** (p. 286)  
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- 281 (279) Mesopleurum enlarged posteriorly so that it touches or nearly touches base of gaster, thorax in side view with hind coxa more or less clearly separated from metapleurum and propodeum by posterior margin of mesopleurum (Fig. 177); hypopygium not extending more than three-quarters along gaster ..... 282

**Figs 239–251** 239, 240, *Lutherisca* sp., (239) left antenna, outer aspect, ♀, (240) apex of left forewing venation, upper surface, ♀; 241, *Copidosoma* sp., left antenna, outer aspect showing truncate sensory surface at apex of clava, ♀; 242, *Coccidoxenoides peregrinus* (Timberlake), base of left forewing, upper surface, ♀; 243, 244, *Neochariotopus* sp., (243) apex of right forewing venation, upper surface, ♀, (244) scutellum, dorsal aspect showing sculpture (left side) and distribution of setae (right side), ♀; 245, *Coagerus bouceki* sp. n., right forewing, ♀; 246, *Ooencyrtus* sp., right antenna, outer aspect, ♀; 247, *Coelopencyrtus* sp., apex of right forewing venation, upper surface, ♀; 248, *Coelopencyrtus* sp., base of right forewing, upper surface, ♀; 249, *Copidosoma* sp., base of right forewing, upper surface, ♀; 250, 251, *Zaommoencyrtus* spp., apex of right forewing venation, upper surface, ♀.



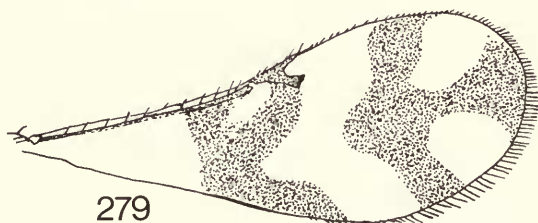
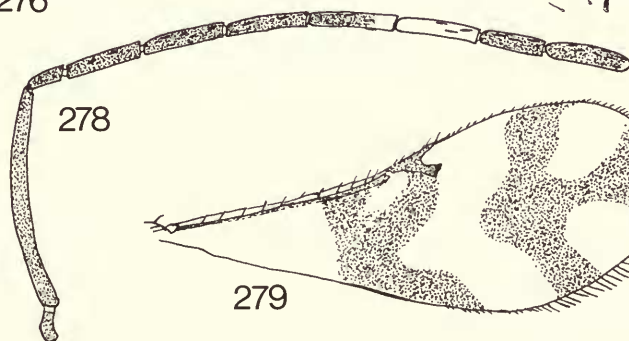
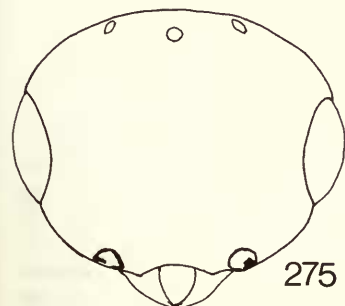
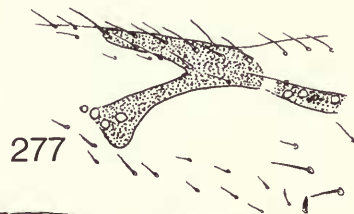
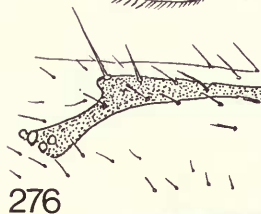
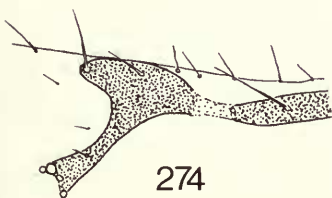
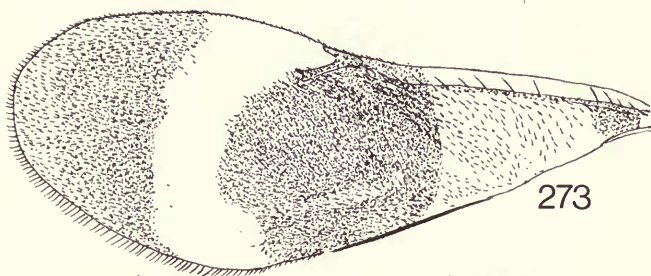
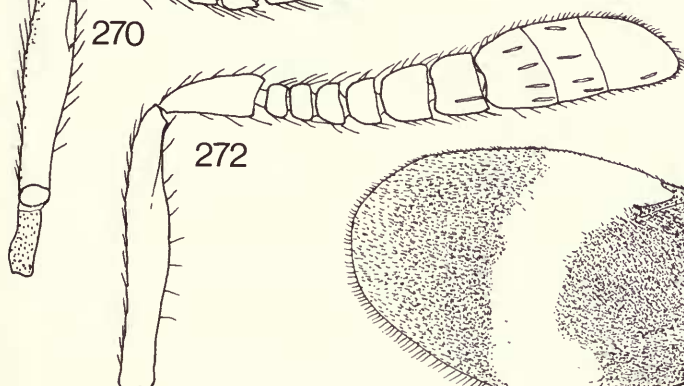
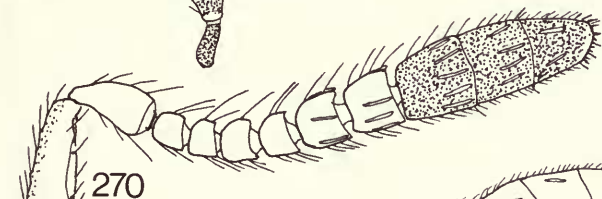
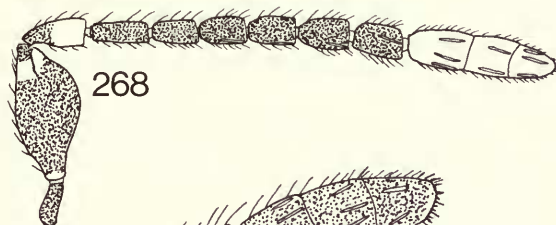
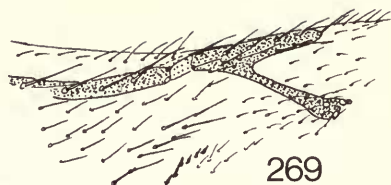
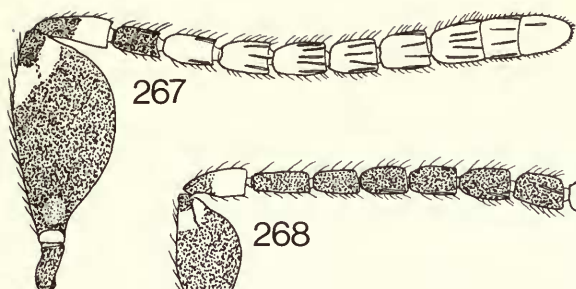
- Mesopleurum not so enlarged posteriorly, when thorax viewed from side the hind coxa is more or less broadly in contact with metapleurum and propodeum and is thus clearly separating mesopleurum from basal segment of gaster (Figs 102, 140, 176), or if as in alternate then hypopygium extends to apex of gaster . . . . . 284
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- 285 (284) Forewing with linea calva interrupted on dorsal surface by three or four lines of setae; exerted part of ovipositor about as long as gaster . . . . . **AUSTRALAPHYCUS** (p. 237)
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- 287 (286) Forewing with sensillae at apex of stigmal vein symmetrical, arranged in a square, apex of stigmal vein without a distinct uncus (Fig. 183) . . . . . **COPIDOSOMA** (p. 257)
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- Mandible with three acute teeth; mesoscutum and scutellum dark with green and blue reflections, not strongly metallic . . . . . **SYRPHOPHAGUS** (p. 338)

**Figs 252–266** 252, *Tassonia* sp., apex of right forewing venation, upper surface, ♀; 253, 254, *Haligra concolor* sp. n., (253) right antenna, outer aspect showing truncate sensory surface at apex of clava, ♀, (254) sculpture in centre of scutellum (area approx. 0.1 mm square), ♀; 255, *Adektitopus* sp., right antenna, outer aspect, ♀; 256–263, *Adektitopus gordhi* sp. n., (256) right antenna, outer aspect, ♀, (257) apex of right forewing venation, upper surface, ♀, (258) sculpture on frontovertex anterior to anterior ocellus (area approx. 0.1 mm square), ♀, (259) hypopygium, ♀, (260) right antenna, outer aspect, ♂, (261) base of right forewing, upper surface, ♂, (262) genitalia, ♂, (263) digits and associated structures; 264, *Anagyrietta* sp., left antenna, outer aspect, ♀; 265, *Amicencyrtus obscurus* Hayat, apex of right forewing venation, upper surface, ♀; 266, *Anagyrus swezeyi* Timberlake, right antenna, outer aspect, ♀.



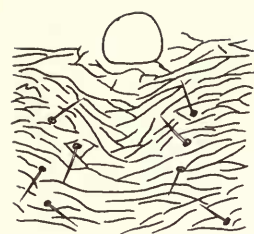
290 (25)	Antennal toruli situated relatively high on head and close together so that their distance from mouth margin is more than one and one-half times the minimum distance between them . . . . .	<b>HEXENCYRTUS</b> (p. 286)
—	Distance of antennal toruli from mouth margin less than one and one-half times the distance between them . . . . .	291
291 (290)	Clava entire . . . . .	292
—	Clava three-segmented . . . . .	294
292 (291)	Clava with a very strong oblique apical truncation which is much longer than remainder of ventral surface of clava; forewing with sensillae at apex of stigmal vein arranged symmetrically in a square, stigmal vein without a distinct uncus (Fig. 183) . . . . .	<b>COPIDOSOMA</b> (p. 257)
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294 (291)	Mandible bidentate . . . . .	<b>HEMILEUCOCERUS</b> (p. 284)
—	Mandible tridentate or with one or two teeth and a truncation . . . . .	295
295 (294)	Propodeum medially less than one-fifth as long as scutellum . . . . .	296
—	Propodeum medially at least one-fifth as long as scutellum . . . . .	303
296 (295)	Dorsum of thorax at least partly orange or yellow . . . . .	<b>XENOSTRYXIS</b> (p. 348)
—	Dorsum of thorax dark brown, green or purple . . . . .	297
297 (296)	Forewing with sensillae at apex of stigmal vein arranged symmetrically in a square; stigmal vein without a distinct apical uncus (Fig. 183) . . .	<b>COPIDOSOMA</b> (p. 257)
—	Forewing with sensillae at apex of stigmal vein not arranged in a square, asymmetrical; stigmal vein with a distinct apical uncus . . . . .	298
298 (297)	Antenna long and filiform, funicle segments increasing in length so that sixth is about three times as long as broad, all segments of clava longer or hardly broader than sixth funicle segment (Fig. 179) . . . . .	<b>AUSTRALIA</b> (p. 237)
—	Antenna not as in alternate; segments of clava only a little longer than broad, quadrate or transverse . . . . .	299
299 (298)	Hypopygium reaching apex of gaster . . . . .	300
—	Hypopygium not reaching apex of gaster . . . . .	301
300 (299)	Hypopygium extending past apex of last tergite so that it is plainly visible in dorsal view (Fig. 125) . . . . .	<b>COCCIDOCTONUS</b> (p. 254)
—	Hypopygium not extending past apex of last tergite and not visible in dorsal view . . . . .	<b>RHOPALENCYRTOIDEA</b> (p. 332)
301 (299)	Forewing with stigmal vein not more than one and one-half times as long as marginal (Fig. 186) . . . . .	<b>SYRPHOPHAGUS</b> (p. 338)
—	Forewing with stigmal vein at least twice as long as marginal . . . . .	302
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—	Mandible with three acute teeth (Fig. 178) . . . . .	<b>PARAENASOMYIA</b> (p. 316)
303 (295)	Gaster with basal segment yellow or yellowish orange and contrasting with the dark remainder . . . . .	<b>PROTYNDARICHOIDES</b> (p. 328)
—	Gaster unicolorous, dark and not paler basally . . . . .	304
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**Figs 267–279** 267, *Anagyrus dactylopii* (Howard), left antenna, inner aspect, ♀; 268, *Anagyrus antoninae* Timberlake, right antenna, outer aspect, ♀; 269–271, *Aphycomorpha araucariae* Timberlake, (269) apex of right forewing venation, upper surface, ♀, (270) right antenna, outer aspect, ♀, (271) head, frontal aspect, ♀; 272, 273, *Aphycus* spp., (272) right antenna, outer aspect, ♀, (273) left forewing, upper surface, ♀; 274, 275, *Asiutis phragmitis* (Ferrière), (274) apex of left forewing venation, upper surface, ♀, (275) head, frontal aspect, ♀; 276, *Astymachus japonicus* Howard, apex of left forewing venation, upper surface, ♀; 277, *Avetianella* sp., apex of left forewing venation, upper surface, ♀; 278, *Austroencyrtus* sp., right antenna, inner aspect, ♀; 279, *Bacalusa fuscipennis* sp. n., right forewing showing pattern of infuscation, ♀.



- Either ovipositor not visible externally or scutellum more or less smooth and shiny; eye distinctly hairy, each hair usually much longer than diameter of a facet ..... 306
- 305 (304) Forewing with submarginal vein with parastigma clearly broadened and forming a weak triangular expansion, this indicated by a single erect seta (Fig. 147) **MAHENCYRTUS** (p. 294)
- Submarginal vein of forewing with parastigma not enlarged, not or hardly wider than proximal part of submarginal vein ..... **ZOOENCYRTUS** (p. 350)
- 306 (304) Gonostyli free and not fused with second valvifers (Fig. 430) and at least slightly exerted and visible externally; scutellum always smooth and shiny **TACHINAEPHAGUS** (p. 340)
- Gonostyli fused with second valvifers (Fig. 415) and never visible externally; scutellum usually distinctly sculptured but occasionally smooth and shiny **RHYTHOTHORAX** (p. 333)
- 307 (26) Mesoscutum with an inconspicuous median longitudinal ridge in posterior half **HENGATA** (p. 284)
- Mesoscutum without a median longitudinal ridge ..... 308
- 308 (307) Antennal scrobes long, straight and deeply impressed, clearly reaching to at least three-quarters distance from antennal toruli to anterior ocellus; interantennal prominence dorsally very sharply margined and pointed and clearly separated from frontovertex (Figs 184, 185) ..... **TACHARDIAEPHAGUS** (p. 340)
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- 309 (308) Pronotum triangular and conspicuous, in dorsal view about equal in length to mesoscutum (Fig. 149) ..... **CHEILONEURELLA** (p. 248)
- Pronotum strongly transverse and inconspicuous, in dorsal view less than one-third as long as mesoscutum ..... 310
- 310 (309) Neither postmarginal vein of forewing longer than stigmal nor eye with dense long setae (occasionally eye hairy, but hairs are not individually longer than a facet); hypopygium not reaching apex of gaster; mandible with one or two teeth and a truncation or rarely with three sharp teeth ..... 311
- Either postmarginal vein of forewing longer than stigmal or eye clothed in conspicuous setae, each clearly much longer than diameter of a facet; hypopygium often reaching apex of gaster; mandible with from one to three sharp teeth ..... 314
- 311 (310) Dorsum of thorax quite flat; hind leg yellow with one or two conspicuous dark bands; forewing with stigmal vein short, subsessile (Fig. 180) ... **PARASCHEDIUS** (p. 318)
- Dorsum of thorax conspicuously convex; legs completely yellow or yellow-orange without any conspicuous dark bands; forewing with stigmal vein relatively long (Figs 181, 182) ..... 312
- 312 (311) Gaster unicolorous, from yellowish brown to orange-brown ... **NEASTYMACHUS** (p. 304)
- Gaster dark brown with a contrasting basal yellow band ..... 313
- 313 (312) Mesopleurum enlarged and more or less touching basal segment of gaster so that when thorax viewed from side it clearly separates hind coxa from metapleurum and propodeum (Fig. 177); eye with very dense short, translucent hairs ..... **OOENCYRTUS** (p. 309)

**Figs 280–294** 280–288, *Bacalusa fuscipennis* sp. n., (280) sculpture on frontovertex anterior to anterior ocellus (area approx. 0.1 mm square), ♀, (281) sculpture in centre of mesoscutum (area approx. 0.1 mm square), ♀, (282) sculpture in centre of scutellum (area approx. 0.1 mm square), ♀, (283) genitalia, ♀, (284) hypopygium, ♀, (285) head, frontal aspect, ♂, (286) right antenna, outer aspect, ♂, (287) genitalia, ♂, (288) digits and apex of aedeagus; 289, 290, *Cerapteroceroides* sp., (289) right antenna, outer aspect, ♀, (290) apex of left forewing venation, upper surface, ♀; 291, 292, *Cerapterocer* sp., (291) apex of left forewing venation, upper surface, ♀, (292) left forewing showing pattern of infuscation, ♀; 293, 294, *Cercobelus jugaeus* (Walker) (extra-limital species), (293) right mandible, ♀, (294) head, frontal aspect, ♀.



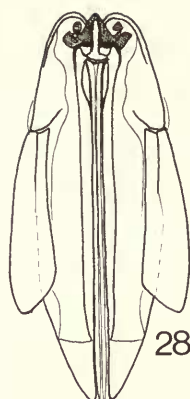
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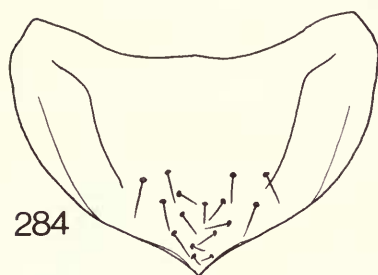
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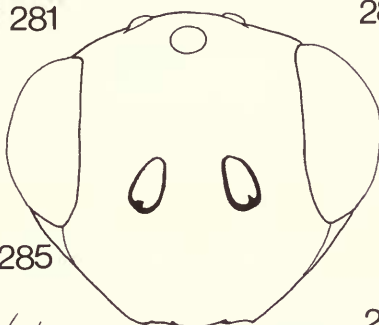
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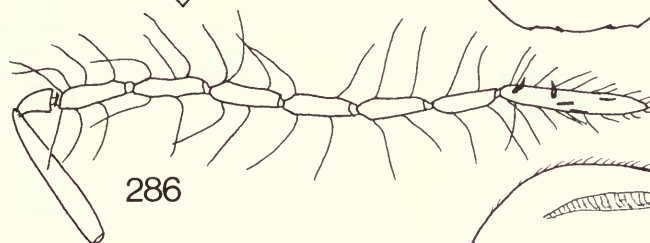
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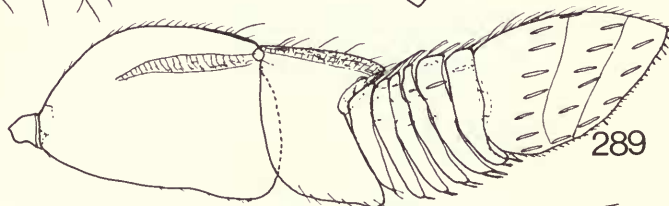
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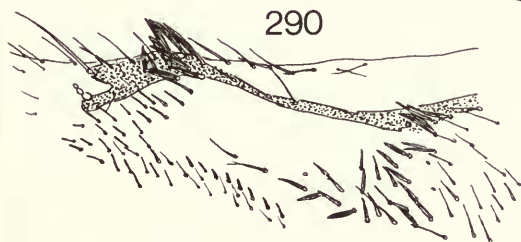
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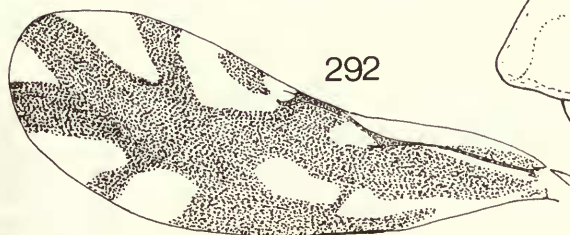
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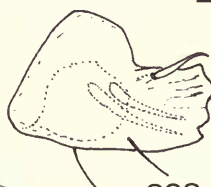
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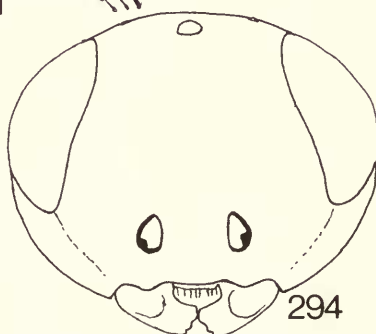
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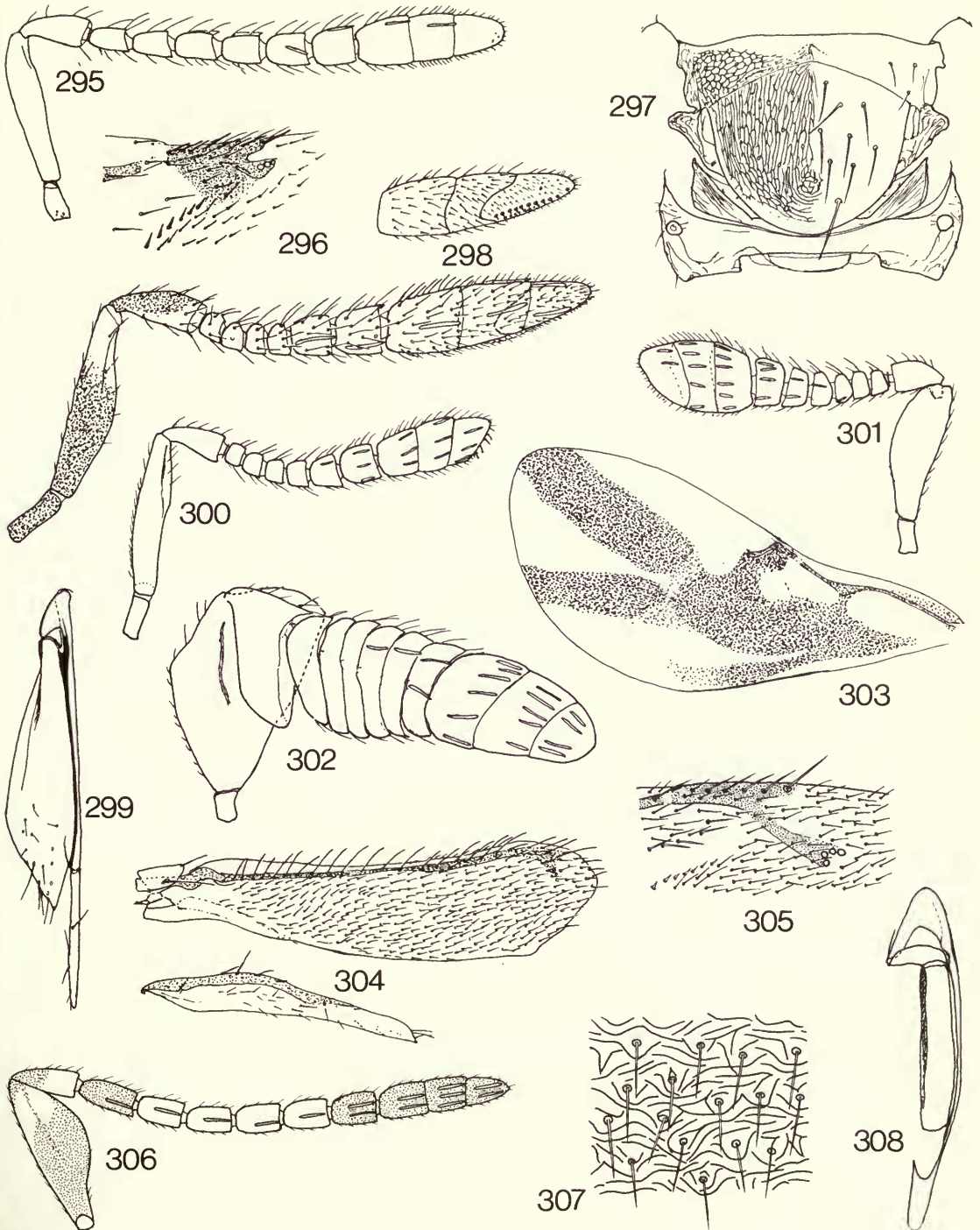
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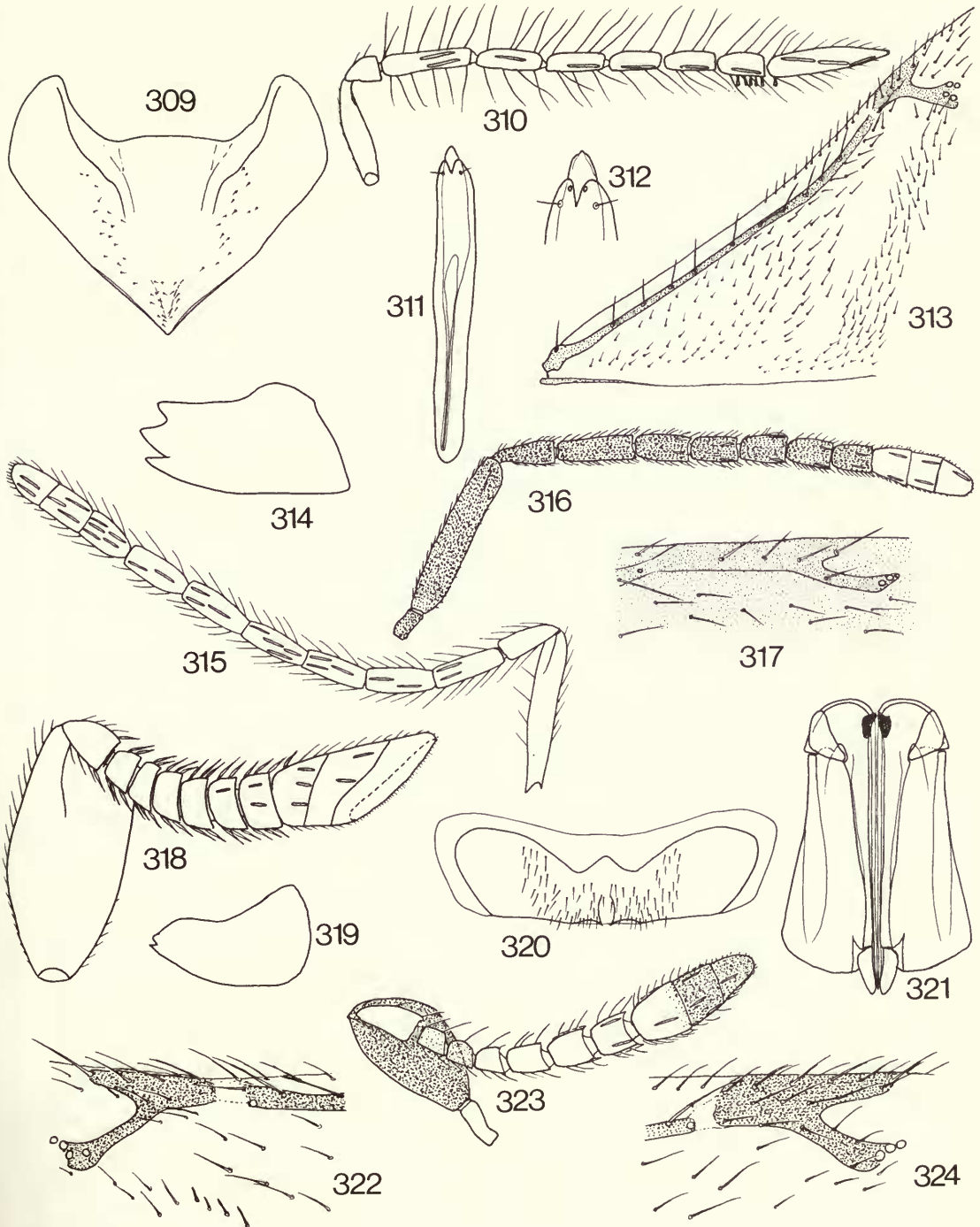
- Mesopleurum not so enlarged and not touching basal segment of gaster so that when thorax viewed from side metapleurum together with propodeum are narrowly in contact with hind coxa (as in Fig. 140); eye naked
- DIAPHORENCYRTUS** (p. 263)
- 314 (310) Mandible with three acute teeth and scutellum with deep reticulate sculpture . . . 315
- Either mandible with only one or two acute teeth or scutellum more or less smooth and shiny . . . . . 316
- 315 (314) Hypopygium not extending more than two-thirds along gaster; forewing with postmarginal vein longer than stigmal (Figs 156, 187) . . . . . **ETHORIS** (p. 275)
- Hypopygium extending to at least four-fifths along gaster; forewing with postmarginal vein rarely longer than stigmal . . . . . 316
- 316 (314, 315) Ovipositor at least slightly exerted with sheaths flattened from side to side; gonostyli free and at least about one-quarter as long as ovipositor (Fig. 430); mandible with three acute teeth (Fig. 144) . . . . . **TACHINAEPHAGUS** (p. 340)
- Ovipositor not exerted, gonostyli not visible externally and not more than one-fifth as long as ovipositor and fused to second valvifers (Fig. 415); mandible with one or two teeth . . . . . **RHYTIDOTHORAX** (p. 333)
- 317 (26) Scape shorter than minimum width of frontovertex . . . . . 318
- Scape not shorter than minimum width of frontovertex . . . . . 320
- 318 (317) Gaster dark with basal orange or yellow ring which contrasts with dark remainder . . . . . **PROTYNDARICHOIDES** (p. 328)
- Gaster unicolorous, dark, without pale basal ring . . . . . 319
- 319 (318) Legs, including coxae, completely yellow; malar space more than two-thirds as long as eye; forewing with setae extending to base (Fig. 132) . . . . . **KATAKA** (p. 290)
- Legs with at least mid tibia and coxae brownish; malar space less than half as long as eye; forewing with proximal part of basal cell naked . . . . . **KAKAOBURRA** (p. 289)
- 320 (317) Gaster with basal orange or yellow ring; head in profile anteriorly more or less evenly rounded; eyes not overreaching occipital margin which is sharp; mesopleurum not enlarged so that when thorax viewed from side hind coxa is in contact with metapleurum and propodeum (as in Figs 139, 140); mandible with three acute teeth . . . . . **PROTYNDARICHOIDES** (p. 328)
- Gaster unicolorous, dark and usually slightly metallic, or if basal segment yellow then *either* head in profile is triangular and abruptly inflexed at top of antennal toruli (as in Fig. 72) and mandible with one tooth and a broad truncation *or* eyes overreach occipital margin which is more or less rounded and mesopleurum posteriorly enlarged so that when thorax viewed from side it clearly separates hind coxa from metapleurum and propodeum (Fig. 177) . . . . . 321
- 321 (320) Scutellum with very elongate striate-reticulate sculpture; hypopygium not extending more than four-fifths along gaster; head in profile anteriorly more or less evenly rounded; mesopleurum not enlarged so that when thorax viewed from side hind coxa touches metapleurum and propodeum (as in Figs 139, 140) . . . . . 322
- Scutellum without striate sculpture, or if appearing striate then either hypopygium reaches apex of gaster or head in profile triangular and abruptly inflexed at top of antennal scrobes (as in Fig. 72) or mesopleurum posteriorly enlarged and more or less touching basal segment of gaster so that when

**Figs 295–308** 295, *Cheiloneurella* sp., right antenna, outer aspect, ♀; 296–299, *Coagerus bouceki* sp. n., (296) apex of right forewing venation, upper surface, ♀, (297) scutellum and propodeum showing sculpture (left side) and distribution of setae (right side), ♀, (298) right antenna, outer aspect, also inner aspect of clava, ♀, (299) genitalia, right side, ventral aspect, ♀; 300, *Coelopencyrtus odyneri* Timberlake, right antenna, outer aspect, ♀; 301, *Coelopencyrtus* sp., right antenna, inner aspect, ♀; 302, 303, *Comperiella lemniscata* Compere & Annecke, (302) right antenna, outer aspect, ♀, (303) left forewing showing pattern of infuscation, ♀; 304, *Cremesina* sp., brachypterous species, right fore and hind wings, ♀; 305–308, *Cremesina aquilonaris* sp. n., (305) apex of right forewing venation, upper surface, ♀, (306) right antenna, outer aspect, ♀, (307) sculpture in centre of mesoscutum (area approx. 0.1 mm square), ♀, (308) genitalia, right side, ventral aspect, ♀.



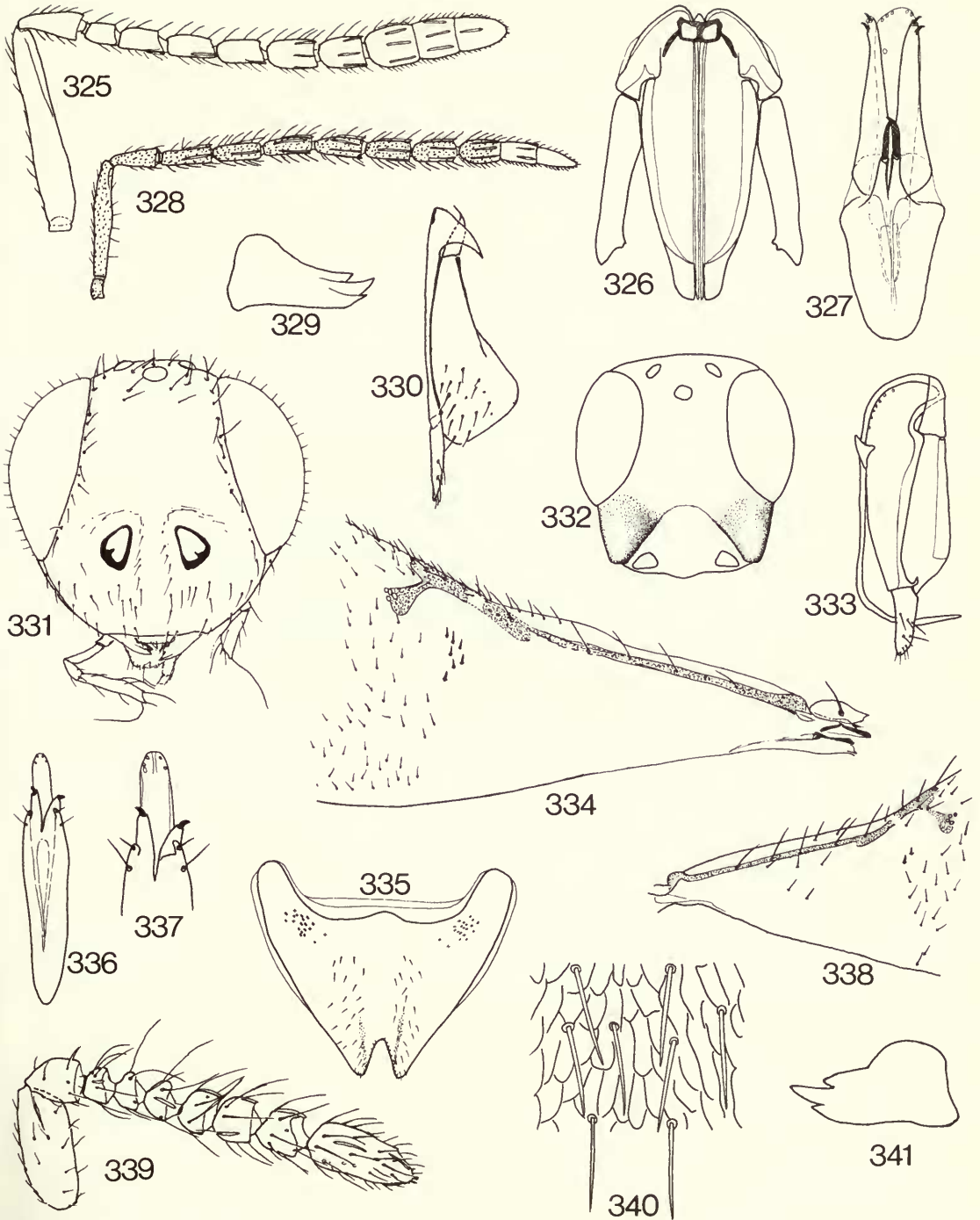
- thorax viewed from side it clearly separates hind coxa from metapleurum and propodeum (Fig. 177) ..... 323
- 322 (321) Both mesoscutum and scutellum with striate-reticulate sculpture, that on scutellum very fine so that it is completely matt and not metallic; hypopygium reaching to only a little more than half way along gaster; mandible tridentate  
**NEGENIASPIDIUS** (p. 305)
- Mesoscutum with shallow reticulate sculpture which contrasts strongly with the striate sculpture of scutellum; scutellum at least slightly metallic; hypopygium reaching to about four-fifths along gaster; mandible with four teeth (Fig. 188) although occasionally with only three ..... **LAMENNAISIA** (p. 292)
- 323 (321) Hypopygium more or less reaching apex of gaster; forewing with postmarginal vein not or hardly longer than stigmal ..... 324
- Hypopygium not extending more than three-quarters along gaster, or if so then postmarginal vein of forewing is at least one-half longer than stigmal ..... 327
- 324 (323) Forewing with filum spinosum directed towards junction of submarginal and marginal veins and converging with setae on proximal margin of linea calva (Fig. 127) ..... **CERCHYSIELLA** (p. 246)
- Forewing with filum spinosum absent or directed towards junction of marginal and stigmal veins and subparallel to setae on proximal margin of linea calva (Figs 152, 153, 158, 186, 238, 249; also as in Figs 134, 135, 139, 166) ..... 325
- 325 (324) Eye not overreaching occipital margin, separated from occiput by a sharp occipital margin; forewing with sensillae at apex of stigmal vein arranged symmetrically in a square, uncus absent (Figs 142, 183) ..... **COPIDOSOMA** (p. 257)
- Eye overreaching occipital margin which is rounded at this point; forewing with sensillae at apex of stigmal vein asymmetrical and not arranged in a square, uncus clearly present ..... 326
- 326 (325) Forewing with marginal vein not more than twice as long as broad and at least a little shorter than stigmal, postmarginal vein a little shorter than stigmal  
**TRJAPITZINELLUS** (p. 346)
- Forewing with marginal vein at least about four times as long as broad and longer than stigmal, postmarginal vein as long as or slightly longer than stigmal ..... **PARECTROMOIDES** (p. 320)
- 327 (323) Head in profile triangular, abruptly inflexed at top of antennal scrobes (as in Fig. 72) ..... 328
- Head in profile more or less gradually and evenly anteriorly rounded and not abruptly inflexed at top of antennal scrobes ..... 330
- 328 (327) Mandible with four teeth or with one tooth and a truncation ..... 329
- Mandible with three acute teeth ..... 330
- 329 (328) Mandible with four teeth (Fig. 116) ..... **ADELENCYRTUS** (p. 223)
- Mandible with one tooth and a broad truncation (Fig. 189) ... **COCCIDENCYRTUS** (p. 253)
- 330 (327, 328) Forewing with postmarginal vein at least one and one-half times as long as stigmal ..... 331
- Forewing with postmarginal vein not or hardly longer than stigmal ..... 332
- 331 (330) Mesopleurum posteriorly enlarged and more or less touching basal segment of gaster so that when thorax viewed from side it clearly separates hind coxa from metapleurum and propodeum (as in Fig. 177); mandible with three acute teeth ..... **ENCYRTOIDEA** (p. 268)
- Mesopleurum not posteriorly enlarged so that when thorax viewed from side it is clearly separated from basal segment of gaster by metapleurum and pro-

**Figs 309–324** 309–313, *Cremesina aquilonaris* sp. n., (309) hypopygium, ♀, (301) right antenna, outer aspect, ♂, (311) genitalia, ♂, (312) apex of genitalia, ♂, (313) base of right forewing, upper surface, ♂; 314, 315, *Diasula glabriscutellum* (Girault), (314) left mandible, ♀, (315) left antenna, outer aspect, ♀; 316, *Cyrtocoryphes viridiceps* Timberlake, right antenna, outer aspect, ♀; 317–321, *Doddanusia* sp., (317) apex of right forewing venation, upper surface, ♀, (318) right antenna, outer aspect, ♀, (319) left mandible, ♀, (320) hypopygium, ♀, (321) genitalia, ♀; 322, 323, *Ectopiognatha* sp., (322) apex of left forewing venation, upper surface, ♀, (323) right antenna, outer aspect, ♀; 324, *Gahaniella saissetiae* Timberlake, apex of right forewing venation, upper surface, ♀.



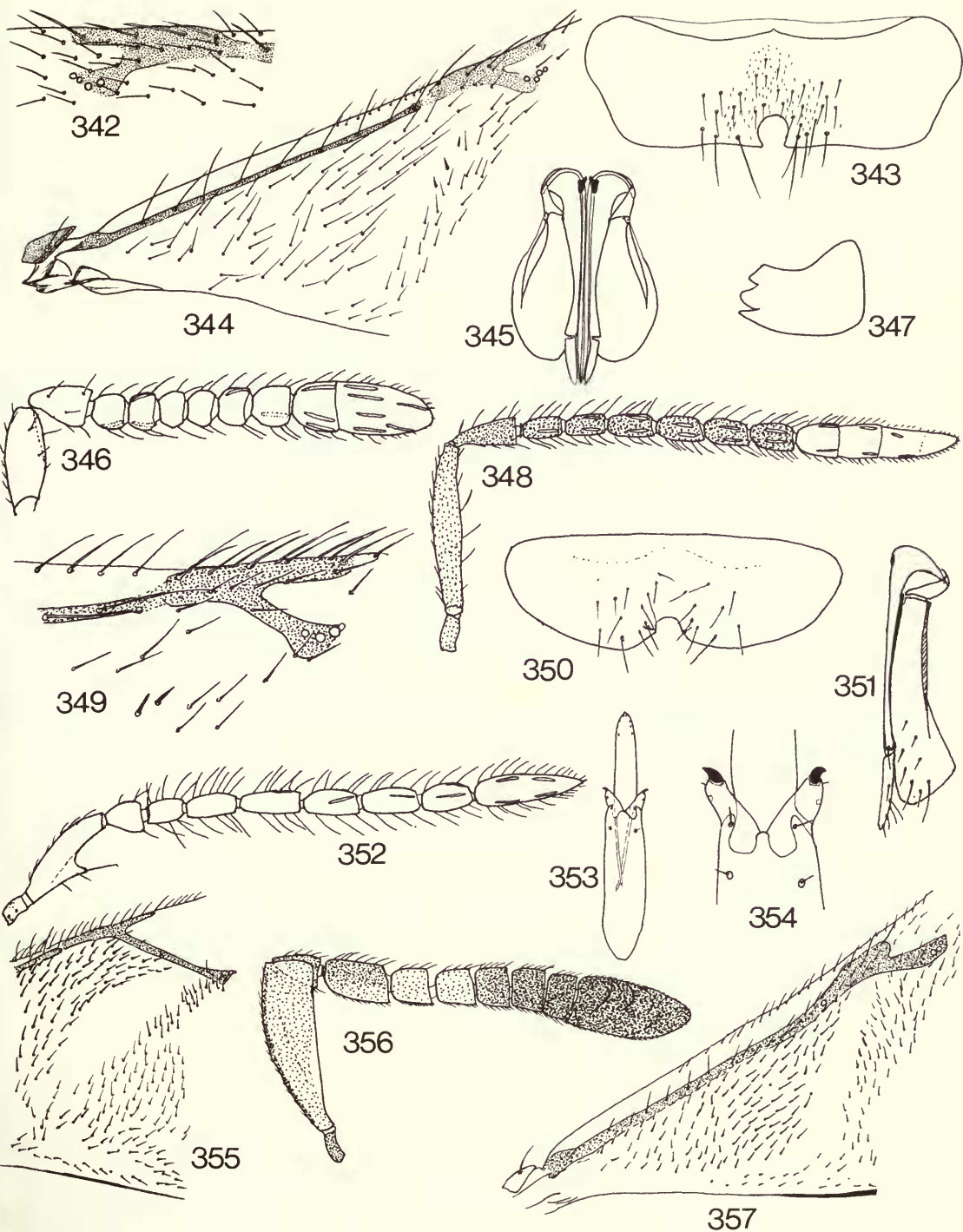
	podeum which are touching hind coxa (Fig. 139); mandible with one or two teeth .....	<b>RHYTIDOTHORAX</b> (p. 333)
332 (330)	Clava solid .....	<b>ZAMENHOFELLA</b> (p. 348)
-	Clava three-segmented .....	333
333 (332)	Scutellum flat and occipital margin rounded .....	<b>MAYRIDIA</b> (p. 295)
-	Scutellum convex, or if more or less flat then occipital margin sharp .....	334
334 (333)	Eye with conspicuous dense, dark setae, each longer than diameter of a facet; mesoscutum and scutellum clothed in dense recumbent dark setae so that dorsum of thorax is distinctly hairy .....	<b>EXORISTOBIA</b> (p. 277)
-	Eye with inconspicuous translucent setae, each not longer than diameter of a facet; mesoscutum and scutellum not noticeably hairy .....	335
335 (334)	Mandible tridentate .....	336
-	Mandible bidentate or with one or two teeth and a truncation .....	338
336 (335)	Posterior margin of mesoscutum more or less straight, not projecting above axillae medially so that when thorax is viewed from above the axillae meet medially (as in Fig. 42) .....	337
-	Posterior margin of mesoscutum clearly projecting backwards above axillae so that when thorax viewed from above and in normal resting position it broadly separates axillae medially (as in Fig. 44) .....	338
337 (336)	Ovipositor not or hardly exerted; forewing with postmarginal vein shorter than stigmal .....	<b>HELEGONATOPUS</b> (p. 283)
-	Either exerted part of ovipositor at least about one-fifth as long as gaster or postmarginal vein of forewing as long as or longer than stigmal .....	340
338 (335, 336)	Forewing with marginal vein less than twice as long as broad .....	339
-	Forewing with marginal vein at least twice as long as broad .....	340
339 (338)	Mandible bidentate; mesoscutum and scutellum both with deep punctate-reticulate sculpture and not shiny .....	<b>FULGORIDICIDA</b> (p. 278)
-	Mandibles not bidentate; mesoscutum never with punctate-reticulate sculpture and always slightly metallic, scutellum occasionally with punctate sculpture .....	<b>OOENCYRTUS</b> (p. 309)
340 (337, 338)	Mesopleurum posteriorly enlarged and more or less touching basal segment of gaster so that when thorax viewed from side it clearly separates hind coxa from metapleurum and propodeum (as in Figs 138, 177) .....	341
-	Mesopleurum not posteriorly enlarged so that when thorax viewed from side hind coxa clearly touches metapleurum and propodeum thus separating mesopleurum from basal segment of gaster (as in Figs 139, 140) .....	342
341 (340)	Occipital margin very sharp, carinate; eye not reaching occiput; head and thorax without pale setae; sculpture of scutellum often slightly deeper and finer than that of mesoscutum, but never strongly so .....	<b>SYRPHOPHAGUS</b> (p. 338)
-	Occipital margin rounded or sharp, but not carinate, or if carinate then scutellum has moderate to strong punctate sculpture which is conspicuously deeper than that of mesoscutum; eyes usually overreaching occipital margin; head and thorax often with conspicuous pale setae .....	<b>TRICHOMASTHUS</b> (p. 346)
342 (340)	Stigmal vein of forewing about twice as long as marginal .....	<b>PARAENASOMYIA</b> (p. 316)
-	Forewing with stigmal vein not more than one and one-half times as long as marginal .....	343
343 (342)	Propodeum medially not more than one-tenth as long as scutellum and devoid of	

**Figs 325-341** 325-327, *Eotopus beneficus* (Shafee), (325) right antenna, outer aspect, ♀, (326) genitalia, ♀, (327) genitalia, ♂; 328-331, *Ethoris dahmsi* sp. n., (328) right antenna, outer aspect, ♀, (329) right mandible, ♀, (330) genitalia, left side, ventral aspect, ♀, (331) head, frontal aspect, ♀; 332-339, *Gentakola trifasciata* (Saraswat), (332) head, dorso-frontal aspect, ♀, (333) genitalia, left side, ventral aspect, ♀, (334) base of left forewing, upper surface, ♀, (335) hypopygium, ♀, (336) genitalia, ♂, (337) digiti and apex of aedeagus, (338) base of right forewing, upper surface, ♂, (339) right antenna, outer aspect, ♂; 340, 341, *Haligra concolor* sp. n., (340) sculpture in centre of mesoscutum (area approx. 0.1 mm square), ♀, (341) left mandible, ♀.

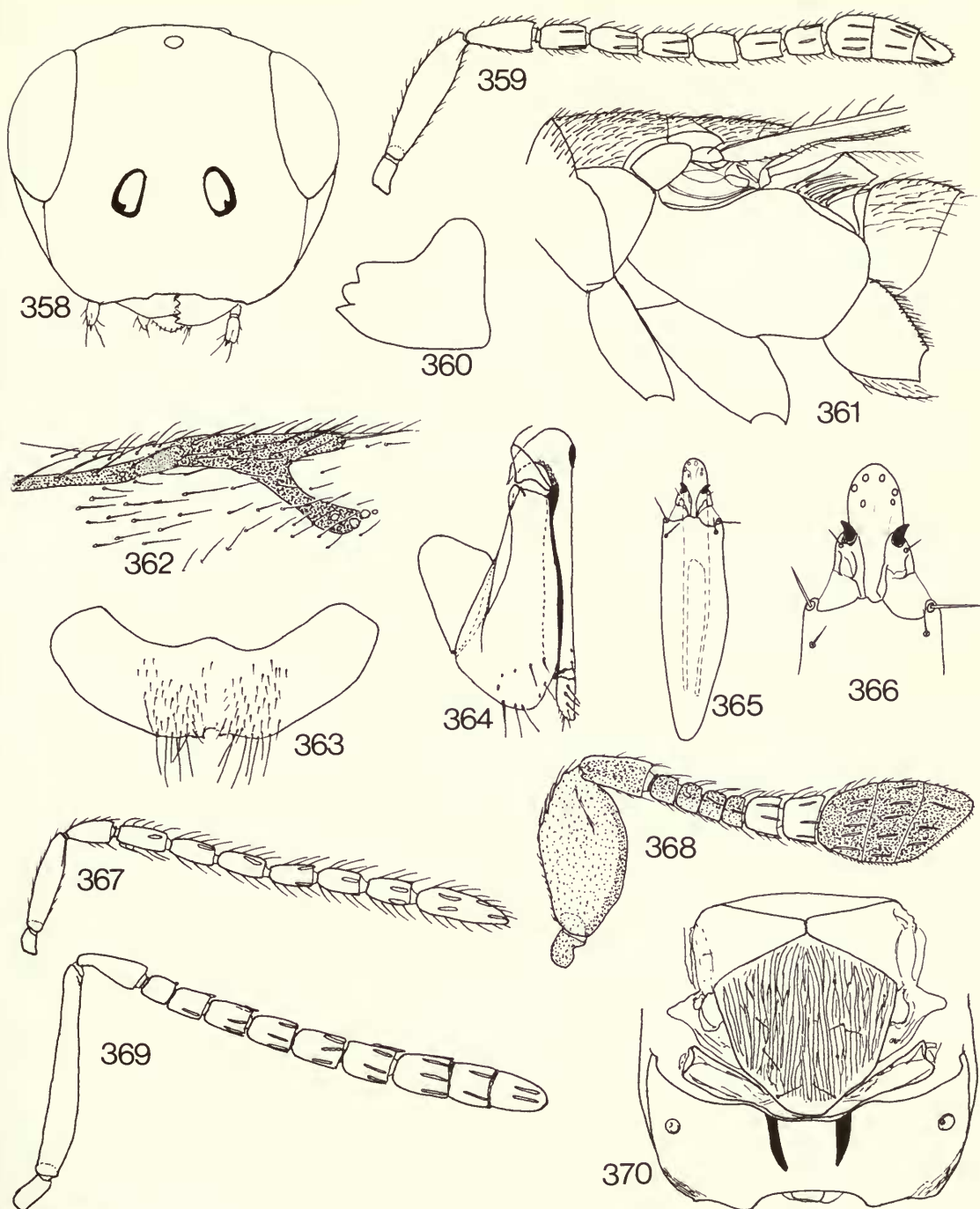


- a median carina; scutellum moderately convex but not very shiny
- *SYRPHOPHAGUS* (p. 338)
- Propodeum medially more than one-sixth as long as scutellum and with a shallow but distinct median carina; scutellum strongly convex and very shiny, at least in its apical one-half . . . . . *DIASULA* (p. 263)
- 344 (28) Forewing with marginal vein punctiform or only very slightly longer than broad . . . . . 345
- Marginal vein of forewing at least twice as long as broad . . . . . 346
- 345 (344) Ovipositor sheaths strongly flattened from side to side and downcurved towards apex (Fig. 176); mandible with three acute teeth . . . . . *CERCHYSIUS* (p. 247)
- Ovipositor sheaths more or less cylindrical and straight; mandible with one or two teeth and a truncation . . . . . *PSYLLAEPHAGUS* (p. 330)
- 346 (344) Forewing with postmarginal vein longer than stigmal (Fig. 190) . . . . . *PAPUNA* (p. 312)
- Forewing with postmarginal vein not longer than stigmal . . . . . 347
- 347 (346) Forewing hyaline . . . . . 348
- Forewing infusate . . . . . 350
- 348 (347) Head and thorax mostly yellowish with a few dark markings . . . . . *XENOSTRYXIS* (p. 348)
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- 349 (348) Forewing with marginal vein at least about three times as long as stigmal (Fig. 192); mesoscutum clothed in moderately dense white setae; scutellum fairly flat with deep reticulate sculpture contrasting with shallower sculpture of mesoscutum . . . . . *ECHTHROGONATOPUS* (p. 267)
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- 350 (347) Infuscation of forewing limited to a longitudinal wedge-shaped mark from apex, submarginal vein with parastigma slightly enlarged into an indistinct triangular expansion indicated by a single erect seta (Fig. 147) . . *MAHENCYRTUS* (p. 294)
- Infuscation of forewing quite extensive and usually forming a distinct pattern, parastigma not or hardly swollen . . . . . 351
- 351 (350) Head in profile triangular and abruptly inflexed at top of antennal scrobes (as in Fig. 72); clava never obliquely truncate and with sutures subparallel; mesoscutum and scutellum never orange or yellowish, always dark and metallic
- *ADELENCYRTUS* (p. 223)
- Head in profile anteriorly more or less evenly curved, although occasionally slightly triangular but not strongly so; clava usually with an oblique apical truncation, or at least with sutures oblique and converging; mesoscutum or scutellum often partly orange or yellowish . . . . . *CHEILONEURUS* (p. 249)
- 352 (28) Forewing with marginal vein absent (Fig. 191) . . . . . *COWPERIA* (p. 259)
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- 353 (352) Clava with a strong oblique apical truncation, the truncate surface about as long or longer than remainder of ventral surface (Figs 146, 193), if clava three-segmented then sutures strongly converge . . . . . 354
- Clava apically more or less rounded or if with a slight oblique truncation then truncate surface clearly much shorter than remainder of ventral surface of clava and sutures, if present, subparallel or occasionally slightly converging . . . . . 358
- 354 (353) Notaular lines complete (Fig. 6) . . . . . *HOMALOTYLUS* (p. 287)
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**Figs 342–357** 342–345, *Haligra concolor* sp. n., (342) apex of left forewing venation, upper surface, ♀, (343) hypopygium, ♀, (344) base of right forewing, upper surface, ♀, (345) genitalia, ♀; 346, *Hamusencyrtus mymaricoides* (Compere, Subba Rao & Kaur), left antenna, inner aspect, ♀; 347–354, *Hengata spinosa* sp. n., (347) left mandible, ♀, (348) right antenna, outer aspect, ♀, (349) apex of right forewing venation, upper surface, ♀, (350) hypopygium, ♀, (351) genitalia, left side, ventral aspect, ♀, (352) right antenna, outer aspect, ♂, (353) genitalia, ♂, (354) digiti and associated structures; 355, 356, *Holanusomyia pulchripennis* Girault, (355) apex of right forewing venation and linea calva, upper surface, ♀, (356) left antenna, inner aspect, ♀; 357, *Indaphycus planus* Hayat, base of right forewing, upper surface, ♀.



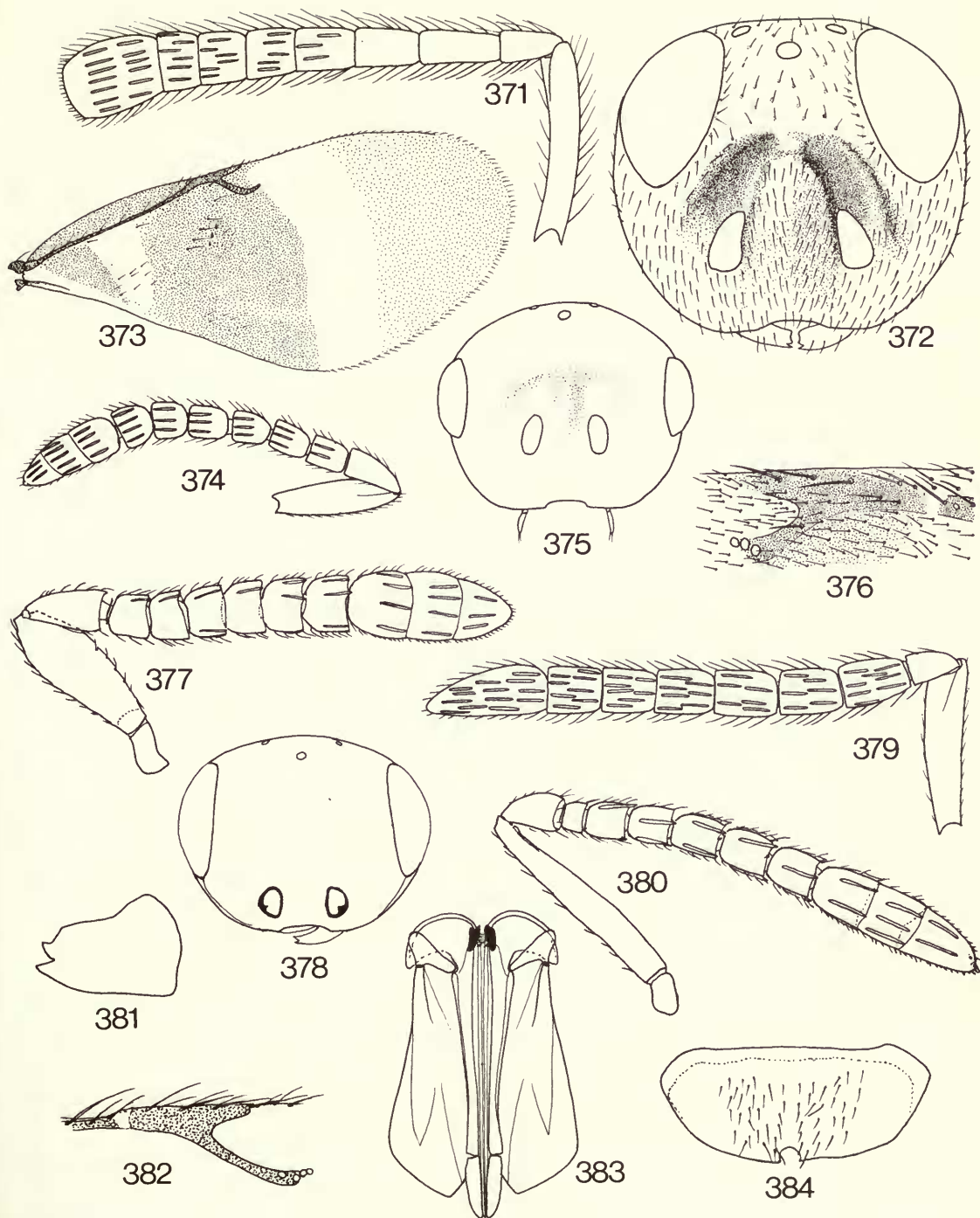




**Figs 358–370** 358–367, *Kataka mudigerensis* sp. n., (358) head, frontal aspect, ♀, (359) right antenna, outer aspect, ♀, (360) left mandible, ♀, (361) thorax, aspect from left side, ♀, (362) apex of right forewing venation, upper surface, ♀, (363) hypopygium, ♀, (364) genitalia, right side, ventral aspect, ♀, (365) genitalia, ♂, (366) digits and apex of aedeagus, (367) right antenna, outer aspect, ♂; 368, *Lakshaphagus hautefeuillei* (Mahdihassan), right antenna, outer aspect, ♀; 369, 370, *Manicnemus indicus* (Mani & Saraswat), (369) right antenna, outer aspect, ♀, (370) scutellum and propodeum showing sculpture of scutellum, ♀.

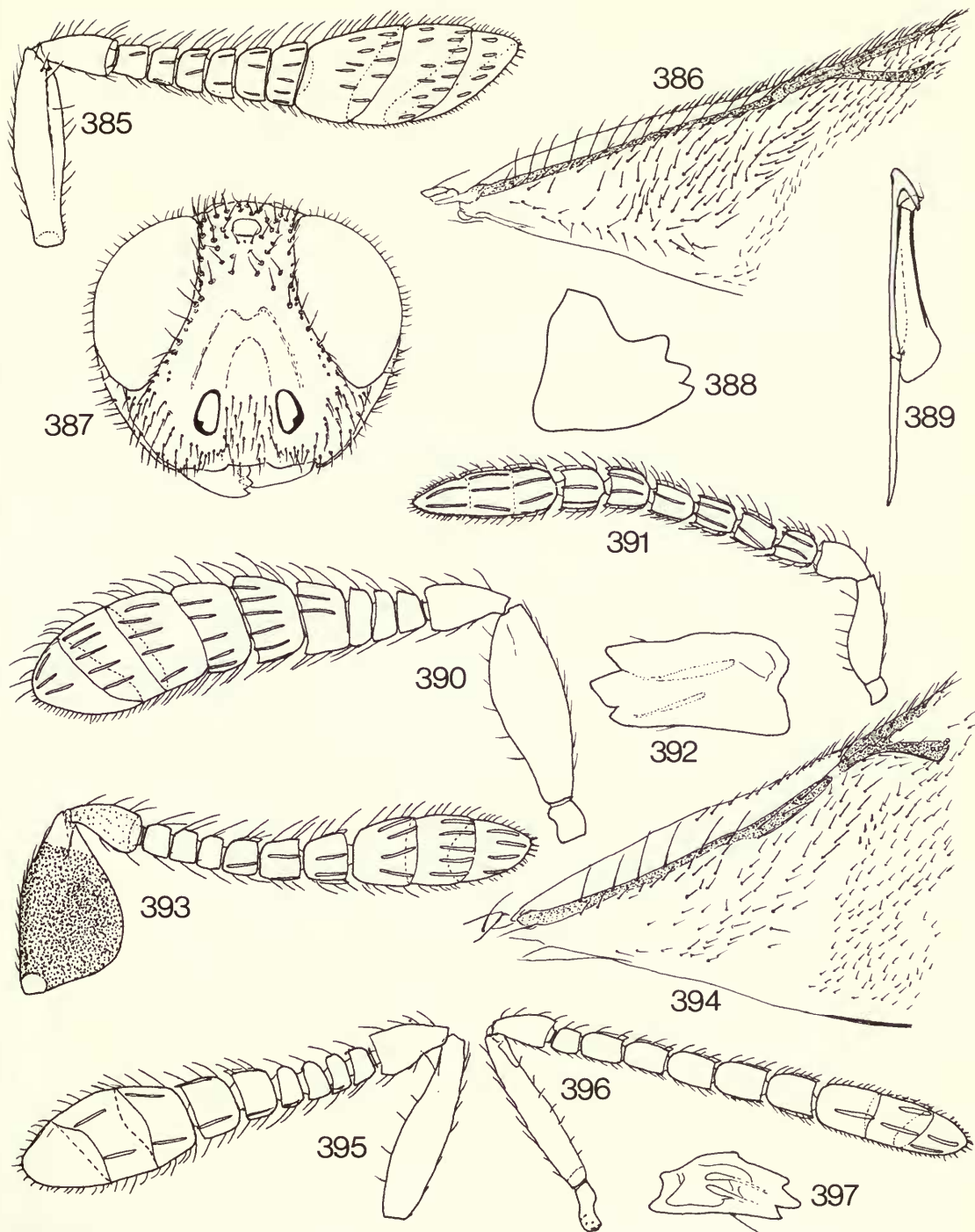
- 368 (366) First funicle segment anelliform and clearly much smaller than the second which is subquadrate; mandible with one tooth and a broad truncation . . . . **BACHIANA** (p. 241)  
 – First funicle segment subequal in size to second and both clearly transverse; mandible with three sharp teeth . . . . . 369
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 – Forewing with postmarginal vein not longer than stigmal . . . . **TELETEREBRATUS** (p. 341)
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- 371 (370) Either first funicle segment longer than pedicel or forewing with postmarginal vein longer than stigmal; notaular lines absent . . . . . 372  
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- 372 (371) Eye clearly reaching occipital margin; posterior ocellus distinctly nearer to eye than to occipital margin; mandible with three teeth . . . . . **PARENCYRTOMYIA** (p. 320)  
 – Eye separated from occipital margin by at least about the diameter of a facet; posterior ocellus at least as near to occipital margin as to eye; mandible truncate without teeth . . . . . 373
- 373 (372) Forewing with postmarginal vein longer than stigmal; frontovertex distinctly broader than half head width . . . . . **PRIONOMASTIX** (p. 325)  
 – Forewing with postmarginal vein not longer than stigmal; frontovertex less than half head width . . . . . **ENCYRTUS** (p. 268)
- 374 (371) Hypopygium not reaching more than four-fifths along gaster; cerci situated in basal half of gaster . . . . . 375  
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- 376 (375) Mesoscutum and scutellum largely metallic green . . . . . **ZARHOPALOIDES** (p. 349)  
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- 377 (376) Mandible with three acute teeth . . . . . **METAPHYCUS** (p. 298)  
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- 378 (375) Apex of clava obliquely truncate with truncate surface longer than adjacent surface on same side of clava and sutures oblique and converging (Fig. 194); forewing with marginal vein not longer than stigmal . . . . . **MASHHOODIELLA** (p. 295)  
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**Figs 371–384** 371–373, *Muluencyrtus nudipennis* sp. n., (371) left antenna, outer aspect (from card-mounted specimen), ♀, (372) head, frontal aspect (from card-mounted specimen), ♀, (373) right forewing, upper surface (from card-mounted specimen), ♀; 374–376, *Nathismusia southwoodi* sp. n., (374) left antenna, outer aspect (from card-mounted specimen), ♀, (375) head, frontal aspect (from card-mounted specimen), ♀, (376) apex of left forewing venation, upper surface, ♀; 377, 378, *Neodusmetia sangwani* (Subba Rao), (377) right antenna, outer aspect, ♀, (378) head, frontal aspect, ♀; 379, *Olypusa hirsuta* sp. n., left antenna, outer aspect, ♂; 380, *Neocharitopus* sp., right antenna, outer aspect, ♀; 381, *Ooencyrtus* sp., left mandible, ♀; 382–384, *Ovaloencyrtus fijiensis* sp. n., (382) apex of right forewing venation, upper surface (discal setae omitted), ♀, (383) genitalia, ♀, (384) hypopygium, ♀.



- 379 (378) Inner margins of eyes clearly converging below anterior ocellus; mesopleurum not posteriorly enlarged so that when gaster viewed from side metapleurum and propodeum are at least narrowly touching hind coxa (as in Fig. 139) **CHEILONEUROMYIA** (p. 249)
- Inner margins of eyes not converging below anterior ocellus; mesopleurum often posteriorly enlarged and more or less touching basal segment of gaster so that when thorax viewed from side it clearly separates hind coxa from metapleurum and propodeum (as in Figs 138, 177) ..... 380
- 380 (379) Scutellum with a very thin, apical flange which projects above median part of propodeum ..... **PARAPHAENODISCUS** (p. 317)
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- 381 (380) Forewing with marginal vein punctiform or nearly so ..... **OOENCYRTUS** (p. 309)
- Forewing with marginal vein at least about three times as long as broad ..... 382
- 382 (381) Forewing with marginal vein less than one and one-half times as long as stigmal; thorax never strongly metallic ..... 383
- Forewing with marginal vein at least twice as long as stigmal; thorax often partly lustrous and metallic ..... 384
- 383 (382) Posterior margin of mesoscutum projecting above axillae so that axillae appear to be separated (as in Fig. 44); scutellum flat, smooth and shiny; clava and apical funicle segments white and contrasting with dark proximal segments **LEEFMANSIA** (p. 292)
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- 384 (382) Basal cell of forewing with two areas of dark setae either side of a naked area or fascia of pale translucent setae ..... \***PROCHEILONEURUS** Girault (p. 326)
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- 385 (374) Forewing with marginal vein at least twice as long as stigmal (Fig. 196); propodeum medially at least half as long as scutellum (Fig. 195) **SAKENCYRTUS** (p. 336)
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- 386 (385) Notaular lines absent; paratergites present (at least represented by a membranous strip) ..... **PARECTROMIDELELLA** (p. 319)
- Notaular lines present in at least anterior one-third of mesoscutum; paratergites absent ..... 387
- 387 (386) Notaular lines complete ..... 388
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- 388 (387) Forewing with stigmal vein straight, not abruptly bent immediately below marginal vein and thus forming an angle of about 45°, linea calva clearly open towards posterior margin of wing (Fig. 199) ..... **APHYCUS** (p. 234)
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- 389 (387) Clava solid with a strong oblique truncation (Fig. 200); forewing with stigmal vein arising from submarginal vein before it reaches anterior wing margin, linea calva broadening towards posterior wing margin and very clearly open (Fig. 201) ..... **ISODROMUS** (p. 289)
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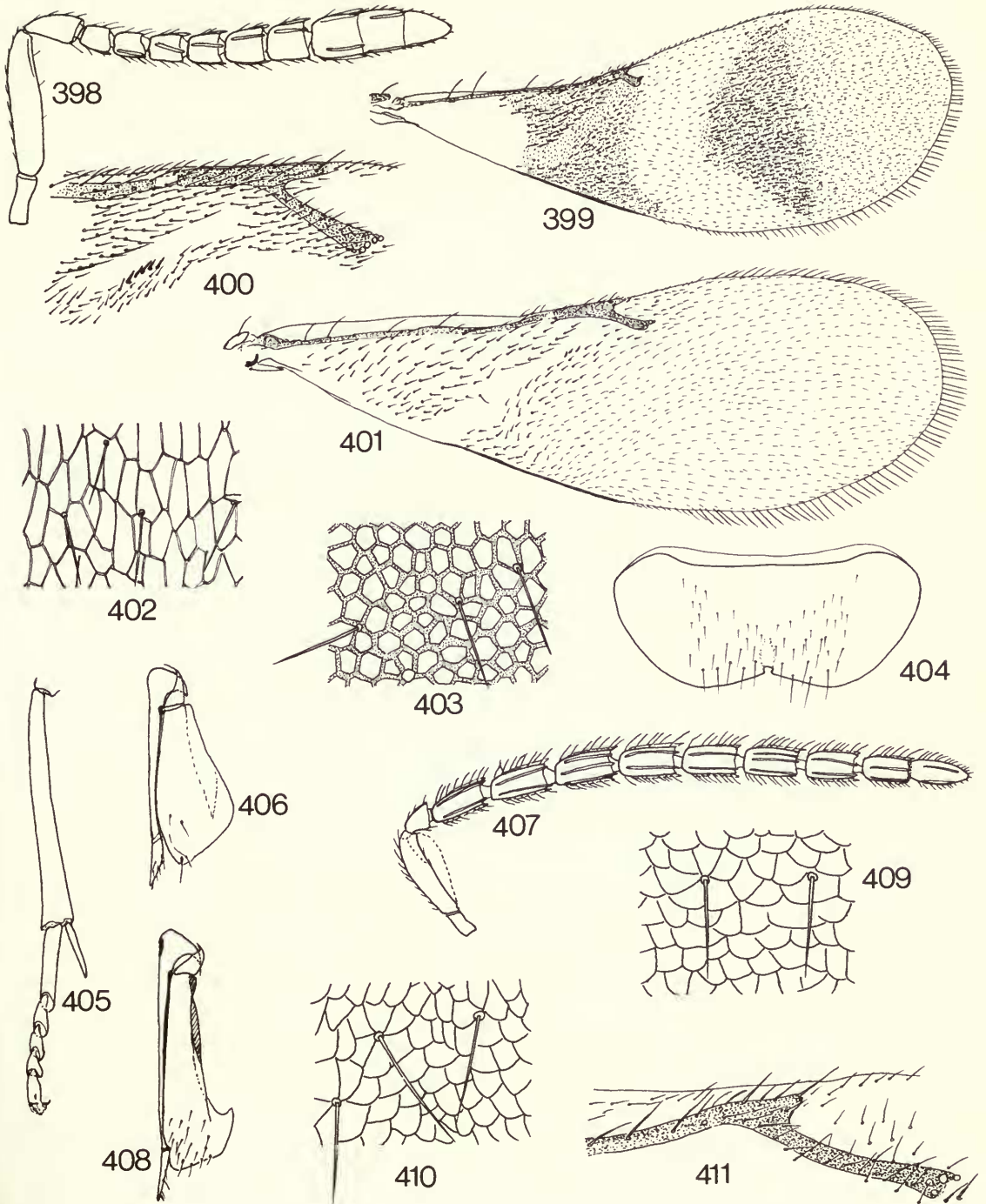
\* Not to be confused with *Prochiloneurus* Silvestri (p. 327)



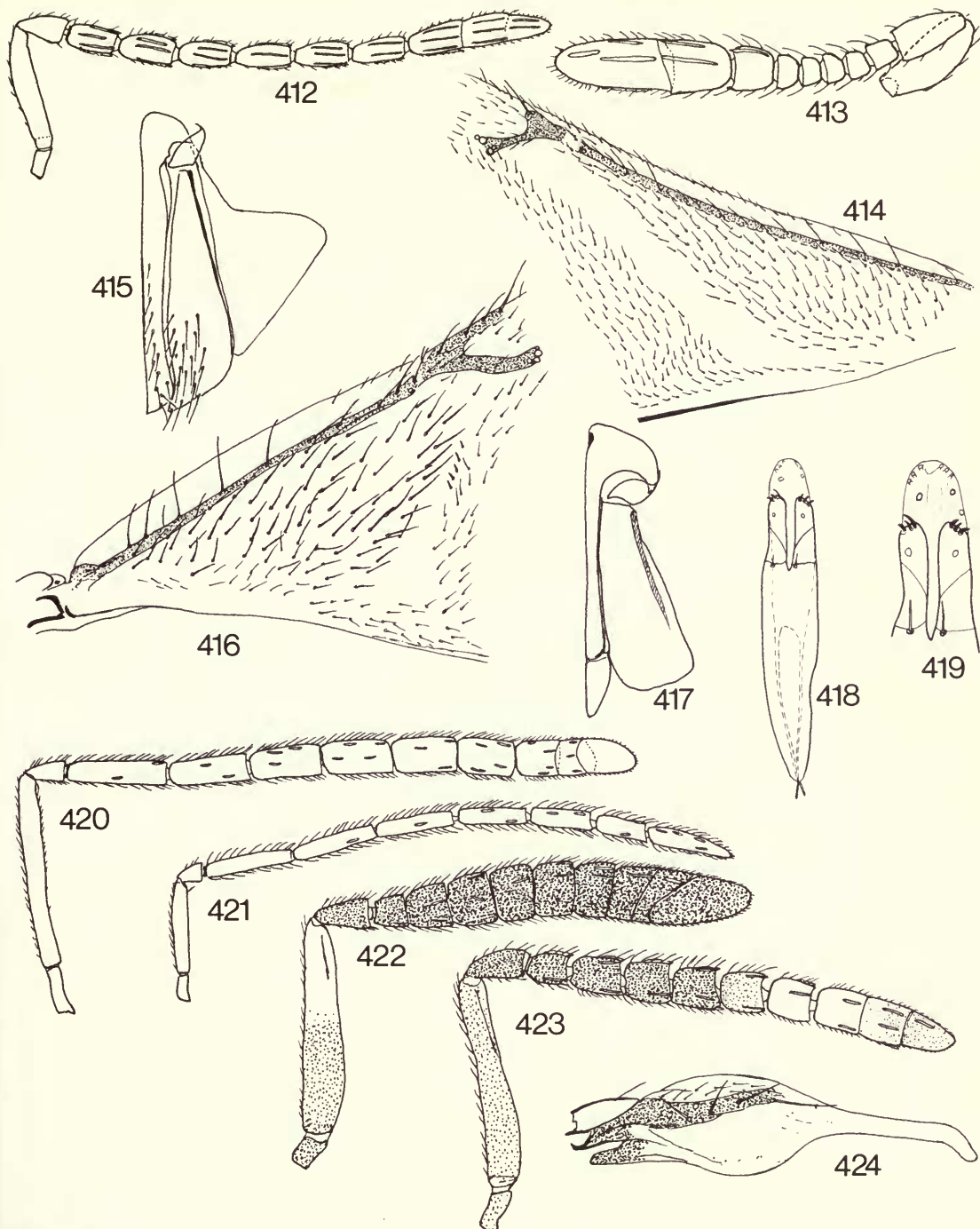
**Figs 385–397** 385–389, *Papuna nemis* sp. n., (385) right antenna, outer aspect, ♀, (386) base of right forewing, upper surface, ♀, (387) head, frontal aspect, ♀, (388) right mandible, ♀, (389) genitalia, left side, ventral aspect, ♀; 390–395, *Parablattica* spp., (390) left antenna, outer aspect, ♀, (391) left antenna, outer aspect, ♂, (392) left mandible, ♀, (393) right antenna, outer aspect, ♀, (394) base of right forewing, upper surface, ♀, (395) left antenna, outer aspect, ♀; 396, 397, *Paraclausenia herbicola* Hayat, (396) right antenna, outer aspect, ♀, (397) right mandible, ♀.

- 391 (31) Mesopleurum posteriorly enlarged and more or less touching basal segment of gaster so that when thorax viewed from side it clearly separates hind coxa from metapleurum and propodeum (as in Figs 138, 177) ..... 392
- Mesopleurum not enlarged so that when thorax viewed from side hind coxa touches metapleurum and propodeum thus separating mesopleurum from gaster (as in Figs 139, 140) ..... 394
- 392 (391) Antennal scrobes narrow, elongate and deeply impressed, separated from anterior ocellus by only a little more than its own diameter; interantennal prominence very long and dorsally sharply delimited, pointed and clearly separate from frontovertex (Figs 184, 185) ..... **TACHARDIAEPHAGUS** (p. 340)
- Antennal scrobes relatively shallow, not long and more or less semicircular and dorsally separated from anterior ocellus by at least twice its diameter; interantennal prominence dorsally more or less rounded or confluent with frontovertex and not sharply delimited ..... 393
- 393 (392) Clava very large with a strong oblique apical truncation and at least twice as long as funicle (Fig. 202); mesoscutum and scutellum with striate-reticulate sculpture (Fig. 203) ..... **AGARWALENCYRTUS** (p. 226)
- Clava smaller, usually shorter than funicle although occasionally a little longer, but never twice as long, usually more or less apically rounded, although occasionally with a short oblique truncation (Fig. 246); mesoscutum and scutellum without striate-reticulate sculpture ..... **OOENCYRTUS** (p. 309)
- 394 (391) Clava entire (Fig. 204) ..... **COPIDOSOMA** (p. 257)
- Clava two- or three-segmented ..... 395
- 395 (394) Body strongly flattened; pronotum longitudinally divided in middle (as in Fig. 38); mandible bidentate with two equal teeth ..... **RHOPUS** (p. 332)
- Body not flattened; pronotum entire; mandible not bidentate, or if so then teeth are unequal in length ..... 396
- 396 (395) Antennal scrobes extending more than half way between toruli and anterior ocellus, their upper limit not semicircular; forewing with postmarginal vein longer than stigmal (Fig. 103) ..... **ERENCYRTUS** (p. 274)
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- 397 (396) Gaster dark with basal segment yellow or orange; ovipositor, although not exerted, curved upwards ..... **PROTYNDARICHOIDES** (p. 328)
- Gaster unicolorous, dark, without paler basal segment; ovipositor straight or curved downwards ..... 398
- 398 (397) Eye clothed in short translucent setae, each not longer than diameter of a facet; hypopygium not extending more than two-thirds along gaster; mandible with two teeth and a truncation; forewing with postmarginal vein not longer than stigmal; propodeum medially not more than one-fifth as long as scutellum ..... **SYRPHOPHAGUS** (p. 338)
- Eye clothed in long, occasionally very dense, setae, each clearly longer than a facet; hypopygium almost always reaching apex of gaster or nearly so; mandible with from one to three sharp teeth, never with a truncation; forewing with postmarginal vein sometimes longer than stigmal; propodeum often medially more than one-fifth as long as scutellum ..... 399

**Figs 398–411** 398, 399, *Paraschedius* spp., (398) right antenna, outer aspect, ♀, (399) right forewing, upper surface, ♀; 400, *Parectromoidella lowelli* (Girault), apex of right forewing venation, upper surface, ♀; 401–406, *Pasulinia gentha* sp. n., (401) right forewing, upper surface, ♀, (402) sculpture in centre of mesoscutum (area approx. 0.1 mm square), ♀, (403) sculpture in centre of scutellum (area approx. 0.1 mm square), ♀, (404) hypopygium, ♀, (405) mid tibia and tarsus, ♀, (406) genitalia, left side, ventral aspect, ♀; 407–410, *Philosindia longicornis* sp. n., (407) right antenna, outer aspect, ♀, (408) genitalia, ventral aspect, left side, ♀, (409) sculpture in centre of mesoscutum (area approx. 0.1 mm square), ♀, (410) sculpture in centre of scutellum (area approx. 0.1 mm square), ♀; 411, *Praleurocerus viridis* (Agarwal), apex of right forewing venation, upper surface, ♀.



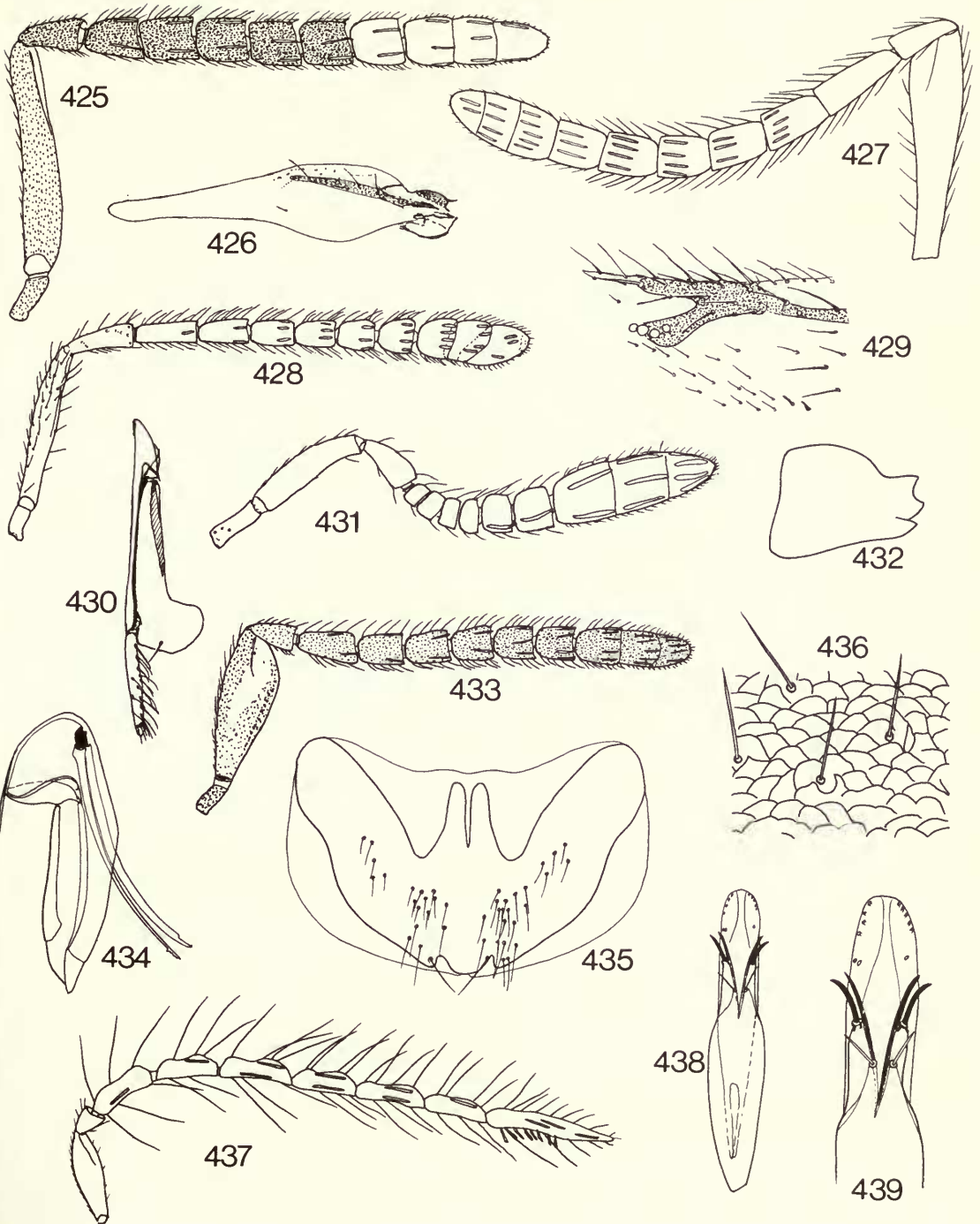
- 399 (398) Ovipositor at least slightly exerted and with sheaths flattened from side to side; gonostyli free and at least one-quarter length of ovipositor (Fig. 430); mandible with three acute teeth (Fig. 144) ..... **TACHINAEPHAGUS** (p. 340)
- Ovipositor not exerted and not visible externally; gonostyli fused to second valvifers (Fig. 415) and not more than one-quarter as long as ovipositor; mandible with one or two teeth ..... **RHYTIDOTHORAX** (p. 333)
- 400 (31) Clava apically obliquely truncate and entire or three-segmented, if three-segmented then outer suture strongly oblique and converging with inner (Figs 205, 211) ..... 401
- Clava apically rounded and two- or three-segmented, sutures more or less parallel ..... 403
- 401 (400) Clava three-segmented (Fig. 205) ..... **PROLEUROCEROIDES** (p. 327)
- Clava entire (Fig. 211) ..... 402
- 402 (401) Scutellum strongly convex and separated from axillae by deep grooves; head and dorsum of thorax with extremely dense, very short, appressed setae; forewing with marginal vein longer than broad ..... **ANANUSIA** (p. 231)
- Scutellum moderately convex and separated from axillae by normal sutures; head and dorsum of thorax with sparse, moderately long erect setae; forewing with marginal vein punctiform (Fig. 212) ..... **TAFTIA** (p. 341)
- 403 (400) Body distinctly dorso-ventrally flattened; clava frequently two-segmented .... 404
- Body not dorso-ventrally flattened; clava always three-segmented ..... 405
- 404 (403) Exserted part of ovipositor about one-quarter length of gaster with sheaths dark brown and contrasting with remainder of body which is yellow; pronotum clearly visible, entire and triangular in dorsal view and longer than mesoscutum (Fig. 209); head sub-opisthognathous; mandible tridentate; clava two-segmented (Fig. 208) ..... **ASTYMACHUS** (p. 236)
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- 405 (403) Forewing with linea calva interrupted in its posterior one-third by at least two lines of setae on dorsal surface of wing (Figs 95, 104), or closed at this point by several lines of setae (Fig. 159) ..... 406
- Forewing with linea calva not interrupted, or if closed then by not more than one line of setae near posterior margin of wing ..... 408
- 406 (405) Forewing with linea calva interrupted in its posterior half (Fig. 104); mandible tridentate; hypopygium not reaching apex of gaster ..... **METAPHYCUS** (p. 298)
- Forewing with linea calva more or less entirely closed in its posterior one-half by setae on dorsal surface of wing; mandible bidentate; hypopygium reaching apex of gaster ..... 407
- 407 (406) Forewing with a distinct pattern of dark and pale setae, stigmal vein long, more than one-quarter length of submarginal vein, marginal vein not quite reaching anterior margin of wing (Fig. 159) ..... **MASHHOODIA** (p. 295)
- Forewing without a distinct pattern of dark and pale setae, stigmal vein less than one-quarter as long as submarginal vein, marginal vein confluent with anterior margin of forewing (Fig. 95) ..... **ANAGYRUS** (p. 229)
- 408 (405) Pronotum triangular in dorsal view, about twice as broad as long and at least about two-thirds as long as mesoscutum (Fig. 149) ..... **CHEILONEURELLA** (p. 248)
- Pronotum very transverse, in dorsal view at least about five times as broad as long and not more than about half as long as mesoscutum ..... 409
- 409 (408) Antennal scrobes deeply impressed and more or less sharply margined laterally; interantennal prominence long, reaching more than half way between antennal toruli and anterior ocellus, sharp at its apex and not confluent with frontoververtex (Figs 184, 185) ..... **TACHARDIAEPHAGUS** (p. 340)
- Antennal scrobes shallow to moderately impressed with lateral margins rounded and not well defined; interantennal prominence short, not reaching half way between antennal toruli and anterior ocellus and rounded at its apex, or if longer then confluent with frontoververtex ..... 410



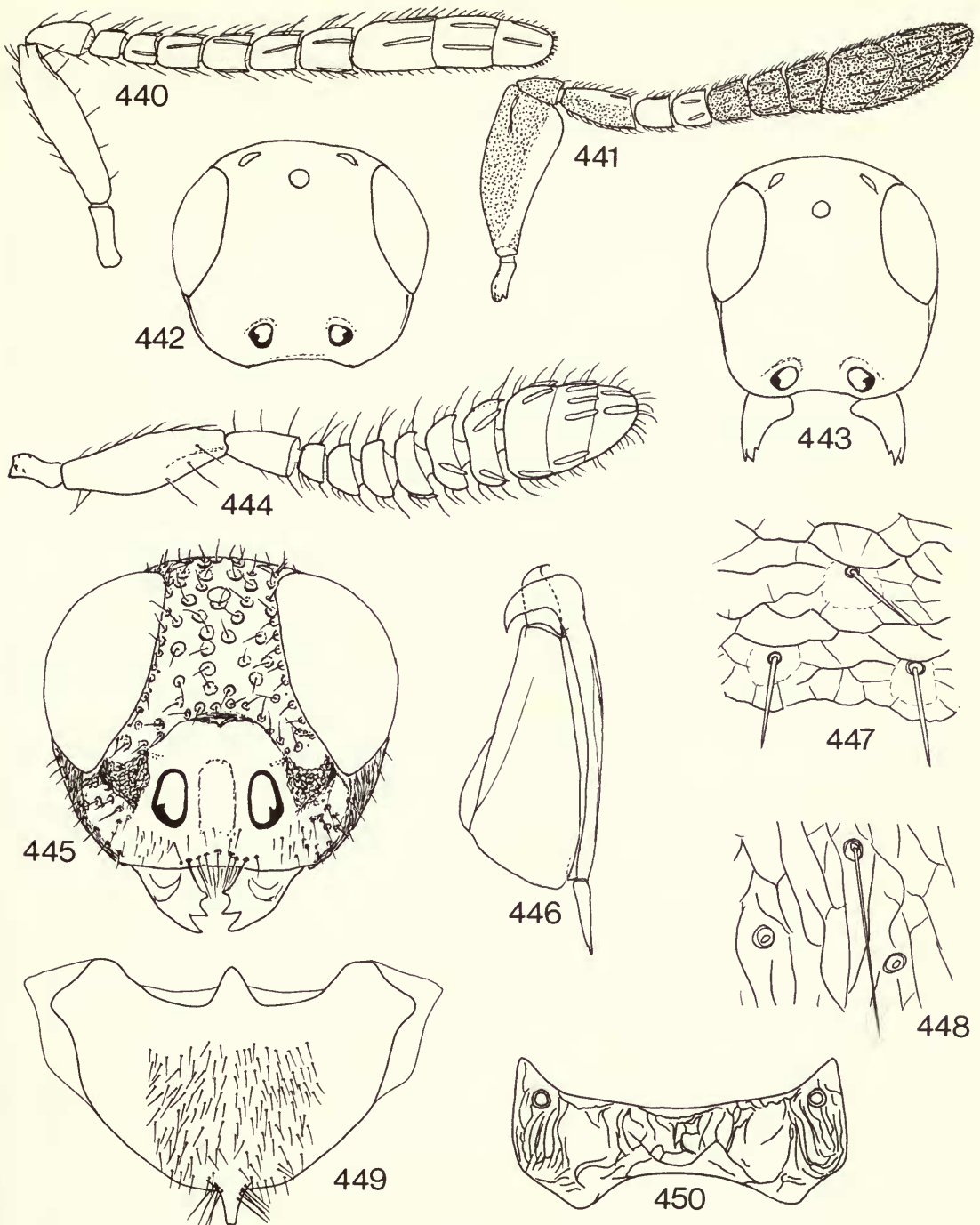
**Figs 412–424** 412–414, *Rhopus* spp., (412) right antenna, outer aspect, ♀, (413) left antenna, outer aspect, ♀, (414) base of left forewing, upper surface, ♀; 415, *Rhytidothorax* sp., genitalia, left side, ventral aspect, ♀; 416, *Proleuroceroides* sp., base of right forewing, upper surface, ♀; 417–421, *Ruanderoma sankarani* sp. nov., (417) genitalia, left side, ventral aspect, ♀, (418) genitalia, ♂, (419) digits and apex of aedeagus, (420) right antenna, outer aspect, ♀, (421) right antenna, outer aspect, ♂; 422, *Sakencyrtus* sp., right antenna, outer aspect, ♀; 423, 424, *Sakencyrtus* sp., (423) right antenna, outer aspect, ♀, (424) right forewing, upper surface, ♀.

- 410 (409) Eye and frontovertex with very conspicuous dark setae which are subequal in length ..... **APHYCOMORPHA** (p. 233)
- Eye more or less naked, if setae on eye clearly visible then they are distinctly shorter than those on frontovertex ..... 411
- 411 (410) Body entirely yellow, except for a black spot in centre of pronotum; frontovertex and dorsum of thorax clothed in conspicuous black setae ..... **PSYLLAPHYCUS** (p. 332)
- Body generally orange or darker; frontovertex clothed in relatively inconspicuous setae, dorsum of thorax occasionally with conspicuous setae ..... 412
- 412 (411) Dorsum of thorax and mesopleura largely metallic green ..... **ZARHOPALOIDES** (p. 349)
- If dorsum of thorax and mesopleura with dark areas then these usually dark brown, but never metallic green ..... 413
- 413 (412) Mesopleurum brown and distinctly darker than dorsum of thorax; mandible with three teeth ..... [*Mesanusia*] **speciosa** Girault (p. 353)
- Mesopleurum not darker than dorsum of thorax; mandible with two teeth and a truncation ..... 414
- 414 (413) Scape longer than minimum width of frontovertex ..... **NEASTYMACHUS** (p. 304)
- Scape shorter than minimum width of frontovertex ..... **APHYCOMORPHA** (p. 233)
- 415 (32)** Clava entire (Fig. 108) ..... **TYNDARICOPSIS** (p. 347)
- Clava three-segmented ..... 416
- 416 (415) Clava much broader than funicle, strongly obliquely truncate and at least as long as funicle; scutellum (excluding axillae) at least a little longer than broad and convex ..... **TYNDARICHUS** (p. 346)
- Clava apically rounded or occasionally obliquely truncate and shorter than funicle, or if obliquely truncate and longer than funicle then scutellum convex but at least a little broader than long ..... 417
- 417 (416) Propodeum medially at least one-fifth as long as scutellum and usually with some irregular carinae present medially (Fig. 210); occipital margin rounded; triangular expansion of submarginal vein of forewing weak (Fig. 147), forewing often with an elongate wedge-shaped pale fuscous mark from apex; top of antennal toruli at least a little above lower eye margins... **MAHENCYRTUS** (p. 294)
- Propodeum medially much less than one-sixth as long as scutellum and without carinae (Fig. 206); occipital margin more or less sharp; forewing with triangular expansion of submarginal vein distinct (Fig. 207), forewing completely hyaline; top of antennal toruli below level of lower eye margins ..... **PARECHTHRODRYINUS** (p. 319)
- 418 (35)** Either forewing with marginal vein absent (Figs 172, 191) or head with distinct piliferous punctures which are usually not separated by more than their own diameters giving it a thimble-like appearance ..... 419
- Forewing with marginal vein present; head without deep piliferous punctures . . . 426
- 419 (418) Marginal fringe of forewing absent; clava apically rounded with sutures parallel ..... **HETEROCOCCIDOXENUS** (p. 286)
- Forewing with marginal fringe present; clava usually obliquely truncate and with sutures oblique and converging ..... 420
- 420 (419) Clava weakly obliquely truncate; first funicle segment almost always at least slightly longer than pedicel, rarely a little shorter ..... 421
- Clava strongly obliquely truncate; first funicle segment always distinctly shorter than pedicel ..... 423
- 421 (420) Forewing with postmarginal vein not longer than stigmal (Fig. 191) . . . **COWPERIA** (p. 259)

**Figs 425–439** 425, 426, *Sakencyrtus* sp., (425) right antenna outer aspect, ♀, (426) left forewing, ♀; 427, *Saprencyrtus casuarinae* (Girault), left antenna, outer aspect (from card-mounted specimen), ♀; 428, *Tachinaephagus* sp., right antenna, outer aspect, ♀; 429, *Thomsonisca pakistanensis* (Ahmad), apex of left forewing venation, ♀; 430, *Tachinaephagus* sp., genitalia, left side, ventral aspect, ♀; 431, 432, *Teleterebratus perversus* Compere & Zinna, (431) right antenna, outer aspect, ♀, (432) right mandible, ♀; 433–439, *Tongyus nesus* sp. n., (433) right antenna, outer aspect, ♀, (434) genitalia left side, ♀, (435) hypopygium, ♀, (436) sculpture of frontovertex anterior to anterior ocellus (area approx. 0.1 mm square), ♀, (437) right antenna, outer aspect, ♂, (438) genitalia, ♂, (439) digits and apex of aedeagus.



- Forewing with postmarginal vein clearly longer than stigmal ..... 422
- 422 (421) Clava entire ..... **PARACLADELLA** (p. 315)
- Clava three-segmented ..... **ANAGYRODES** (p. 228)
- 423 (420) Frontovortex narrow, at narrowest point not more than one-quarter head width; antennal scrobes very deep and dorsally sharply margined; mesopleurum enlarged posteriorly and more or less touching basal segment of gaster so that when thorax viewed from side the hind coxa is clearly separated from metapleurum and propodeum by hind margin of mesopleurum (as in Fig. 177) **AMIRA** (p. 228)
- Frontovortex broad, at narrowest point at least one-third head width; antennal scrobes very shallow or absent and not sharply margined; mesopleurum not posteriorly enlarged and clearly separated from first segment of gaster so that when thorax is viewed from side the hind coxa is broadly in contact with metapleurum and propodeum (as in Fig. 140) ..... 424
- 424 (423) Scutellum broad and flat, clearly much broader than long ..... **AMICENCYRTUS** (p. 227)
- Scutellum distinctly convex, at least as long as broad, usually longer ..... 425
- 425 (424) Mesoscutum and scutellum with very deep distinct piliferous punctures which are more or less touching each other and give a thimble-like appearance; propodeum relatively long medially, at least about one-quarter as long as scutellum ..... **BOTHRIOTHORAX** (p. 243)
- Mesoscutum with shallow, very indistinct piliferous punctures, scutellum with raised, closely meshed, reticulate sculpture; propodeum very short, not more than one-tenth as long as scutellum ..... **MENISCOCEPHALUS** (p. 296)
- 426 (418) Forewing with postmarginal vein as long as or longer than stigmal ..... 427
- Forewing with postmarginal vein shorter than stigmal ..... 430
- 427 (426) Clava strongly obliquely truncate and much broader than funicle (Fig. 211); face with a strong transverse carina from below eyes and across top of antennal scrobes ..... **TAFTIA** (p. 341)
- Clava more or less apically rounded and not or hardly broader than funicle; face without a strong transverse carina ..... 428
- 428 (427) Forewing with postmarginal vein clearly much longer than stigmal ..... 429
- Forewing with postmarginal vein about as long as stigmal ..... 430
- 429 (428) Clava entire; mandible long with two very short apical teeth .... **PARACLADELLA** (p. 315)
- Clava three-segmented; mandible short and broad with one very small tooth and a broad truncation ..... **PRIONOMASTIX** (p. 325)
- 430 (426, 428) Posterior margin of mesoscutum projecting slightly backwards above axillae so that when thorax is in normal resting position and viewed from above, the axillae appear to be broadly separated (as in Fig. 44); mesopleurum enlarged posteriorly and more or less touching basal segment of gaster so that when thorax viewed from side it clearly separates metapleurum and propodeum from hind coxa (Fig. 177) ..... 431
- Posterior margin of mesoscutum almost straight, not projecting above axillae and so axillae appear to meet medially (as in Fig. 42); mesopleurum not posteriorly enlarged and not touching basal segment of gaster so that when thorax viewed from side the hind coxa touches metapleurum and propodeum (as in Figs 139, 140) ..... 432
- 431 (430) Mesoscutum and scutellum with coarse punctate-reticulate sculpture; mandible bidentate ..... **FULGORIDICIDA** (p. 278)
- Mesoscutum and occasionally also scutellum with shallow reticulate sculpture; mandible with one or two teeth and a truncation or obscurely tridentate **OOENCYRTUS** (p. 309)
- 432 (430) Hypopygium more or less reaching apex of gaster; occipital margin sharp behind eyes; forewing with sensillae at apex of stigmal vein arranged symmetrically in a square, uncus absent (Figs. 142, 183); mandible with three acute teeth **COPIDOSOMA** (p. 257)
- Hypopygium not usually extending more than two-thirds along gaster, although very occasionally nearly reaching apex; occipital margin often more or less rounded, particularly behind eyes; forewing with sensillae at apex of stigmal



**Figs 440–450** 440, *Xenostyxis* sp., right antenna, outer aspect, ♀; 441, *Yasumatsuiola* sp., right antenna, outer aspect, ♀; 442–444, *Zaommoencyrtus* spp., (442) head, frontal aspect, ♀, (443) head, frontal aspect, ♀, (444), right antenna, outer aspect, ♀; 445–450, *Zozoros sinemarginis* sp. n., (445) head, frontal aspect, ♀, (446) genitalia, right side, ventral aspect, ♀, (447) sculpture in centre of mesoscutum (area approx. 0.1 mm square), ♀, (448) sculpture in centre of scutellum (area approx. 0.1 mm square), ♀, (449) hypopygium, ♀, (450) propodeum, dorsal aspect showing sculpture, ♀.

- vein arranged asymmetrically and not in a square, uncus present; mandible with one or two teeth and a truncation, or rarely with three teeth ..... 433
- 433 (432) Mandible with one or two teeth and a truncation (Figs 121–122) *PSYLLAEPHAGUS* (p. 330)
- Mandible with three acute teeth (Fig. 178) ..... *PARAENASOMYIA* (p. 316)
- 434 (38) Antennal toruli situated high on head, their lowest margins not or hardly below level of lowest eye margins when head viewed from front (Fig. 113) ..... 435
- Antennal toruli lower on head, their lowest margins well below level of lowest eye margins when head viewed from front ..... 436
- 435 (434) Scape not or hardly longer than malar space; pedicel and funicle segments subequal in size and shape (Fig. 227); posterior ocellus about equidistant from eye and occipital margins, the latter sharp ..... *GAHANIELLA* (p. 278)
- Scape at least twice as long as malar space; pedicel and funicle segments not subequal in size and shape, some at least distinctly narrower or shorter than others; posterior ocellus much closer to eye margin than to occipital margin, the latter more or less rounded ..... *MAYRIDIA* (p. 295)
- 436 (434) Mesopleurum posteriorly enlarged so that it more or less touches basal segment of gaster and when thorax viewed from side it clearly separates hind coxa from metapleurum and propodeum (Fig. 177) ..... 437
- Mesopleurum not so conspicuously enlarged, so that when thorax viewed from side hind coxa more or less broadly touches metapleurum and propodeum and together they clearly separate mesopleurum from basal segment of gaster (as in Figs. 139, 140) ..... 439
- 437 (436) Mandible bidentate; vertex, mesoscutum and scutellum with coarse punctate-reticulate sculpture ..... *FULGORIDICIDA* (p. 278)
- Mandible with one or two teeth and a truncation; at least mesoscutum with relatively shallow sculpture ..... 438
- 438 (437) Forewing with marginal vein less than twice as long as broad (Fig. 152) *OOENCYRTUS* (p. 309)
- Forewing with marginal vein more than twice as long as broad (Fig. 153) *TRICHOMASTHUS* (p. 346)
- 439 (436) Head triangular in profile and strongly inflexed at top of antennal scrobes (Figs 72, 228); mandible with four teeth or one small tooth and a very broad truncation (Figs 116, 229); mesoscutum with dark setae; hypopygium with apex not more than two-thirds along gaster ..... 440
- Head in profile more or less anteriorly evenly rounded, not strongly inflexed at top of antennal scrobes and not triangular, or if slightly so then *either* mandible has three acute teeth and the mesoscutum is clothed in dense white setae *or* the hypopygium reaches or very nearly reaches apex of gaster ..... 441
- 440 (439) Clava more or less apically rounded, not truncate and with sutures more or less parallel; gaster unicolorous and metallic; mandible with four teeth (Fig. 116) *ADELENCYRTUS* (p. 223)
- Clava strongly obliquely truncate with outer suture oblique (Fig. 230); gaster largely yellow or orange; mandible with one small tooth and a very broad truncation (Fig. 229) ..... *PASULINIA* (p. 320)
- 441 (439) Head with very distinct, deep piliferous punctures, these usually shiny-bottomed and contrasting with the relatively dull areas between, each puncture giving rise to a broadened silvery white seta ... *MENISCOCEPHALUS* (p. 296)
- Either head without deep piliferous punctures, or if punctures deep and conspicuous then they give rise to dark setae and not broadened silvery white setae ..... 422
- 442 (441) Base of gaster at least partly yellow or orange; clava two- or three-segmented and not obliquely truncate ..... 443
- Gaster unicolorous and dark, or if with base yellow then clava entire and strongly obliquely truncate ..... 444
- 443 (442) Forewing with stigmal vein long, at least a little longer than marginal; clava apically rounded; mandible with two teeth and a truncation *DIAPHORENCYRTUS* (p. 263)
- Forewing with stigmal vein short or subsessile, distinctly shorter than marginal

- (Figs 231, 232); clava apically rounded or transversely truncate (Figs 233, 234); mandible with three acute teeth ..... **PROTYNDARICHOIDES** (p. 328)
- 444 (442) Hypopygium reaching or very nearly reaching apex of gaster, or if only extending about three-quarters along gaster then clava apically rounded; clava three-segmented ..... 445
- Hypopygium not extending more than two-thirds along gaster, or if slightly more then clava either apically obliquely truncate or solid or two-segmented ..... 451
- 445 (444) Forewing with filum spinosum directed towards junction of submarginal and marginal veins and thus distinctly converging with setae on proximal margin of lineae calva (Fig. 127) ..... **CERCHYSIELLA** (p. 246)
- Forewing with filum spinosum more or less directed towards junction of stigmal and marginal veins and thus subparallel to setae on proximal margin of lineae calva (Figs 139, 236, 238) ..... 436
- 446 (445) Head and thorax with deep, fine, punctate sculpture; forewing with postmarginal vein longer than stigmal ..... **BLASTOTHRIX** (p. 242)
- Sculpture of head and thorax shallow, although scutellum occasionally has deep reticulate sculpture, or if head and thorax with punctate sculpture then postmarginal vein of forewing not longer than stigmal ..... 447
- 447 (446) Eye clearly overreaching occipital margin ..... **PARECTROMOIDES** (p. 320)
- Eye clearly separated from occiput by occipital margin which is more or less sharp at this point ..... 448
- 448 (447) Eye more or less naked; head and thorax bright metallic green or blue-green ..... **PSYLLAEPHAGUS** (p. 330)
- Eye distinctly hairy; head and thorax usually dull but occasionally metallic .... 449
- 449 (448) Propodeum medially not more than one-sixth length of scutellum; mandible with two teeth and a truncation, three teeth or four teeth ..... **EXORISTOBIA** (p. 277)
- Propodeum medially at least one-fifth as long as scutellum; mandible with from one to three sharp teeth ..... 450
- 450 (449) Mandible with three acute teeth (Fig. 144); ovipositor usually slightly exerted with sheaths flattened from side to side ..... **TACHINAEAPHAGUS** (p. 340)
- Mandible with one or two teeth; ovipositor always hidden and, together with gonostyli, not visible externally ..... **RHYTIDOTHORAX** (p. 333)
- 451 (444) Forewing with postmarginal vein longer than stigmal ... **AUSTROENCYRTOIDEA** (p. 238)
- Forewing with postmarginal vein not longer than stigmal ..... 452
- 452 (451) Clava solid or two-segmented ..... 453
- Clava three-segmented ..... 454
- 453 (452) Mandible with three acute teeth; eye clearly separated from occiput by sharp occipital margin; forewing with sensillae at apex of stigmal vein arranged symmetrically in a square, uncus absent (Figs 142, 183) ..... **COPIDOSOMA** (p. 257)
- Mandible with one or two teeth and a truncation; eye overreaching occipital margin; forewing with sensillae at apex of stigmal vein not arranged in a square, uncus present ..... **ISODROMOIDES** (p. 289)
- 454 (452) Forewing with marginal vein at least three times as long as broad (Figs 186, 192); clava either transversely or obliquely truncate ..... 455
- Forewing with marginal vein only slightly longer than broad, clava apically rounded ..... 456
- 455 (454) Clava with a strong oblique truncation (Fig. 224); scutellum fairly flat with fine, deep, reticulate sculpture which gives it a matt appearance; forewing with marginal vein at least five times as long as broad (Fig. 192); mandible with three acute teeth (Fig. 223) ..... **ECHTHROGONATOPUS** (p. 267)
- Clava with only a slightly oblique, transverse, apical truncation; scutellum slightly convex with shallow, reticulate sculpture and at least slightly shiny; forewing with marginal vein not more than four times as long as broad (Fig. 186); mandible with one or two teeth and a truncation ... **SYRPHOPHAGUS** (p. 353)
- 456 (454) Mandible with three acute teeth (Fig. 178); thorax dull purple-brown with green and coppery reflections ..... **PARAENASOMYIA** (p. 316)
- Mandible with one tooth and a truncation (or occasionally with two teeth and a truncation) (Figs 121, 122); thorax metallic green ..... **PSYLLAEPHAGUS** (p. 330)

457 (39)	Cercal plates in apical half of gaster .....	458
-	Cercal plates in basal half of gaster .....	460
458 (457)	Forewing with postmarginal vein shorter than stigmal (Fig. 215); hind tibia strongly oblique at apex (Fig. 216) .....	<i>MULUENCYRTUS</i> (p. 300)
-	Forewing with postmarginal vein clearly longer than stigmal; hind tibia not strongly oblique at apex .....	459
459 (458)	Hypopygium reaching or very nearly reaching apex of gaster; mandible with one long, sickle-shaped tooth (or possibly two very short apical teeth giving the mandible a unidentate appearance) .....	<i>PARALEPTOMASTIX</i> (p. 316)
-	Hypopygium not reaching more than half way along gaster; mandible with three apical teeth .....	<i>EUCOMOMORPHELLA</i> (p. 276)
460 (457)	Costal cell of forewing with setae evenly distributed over its dorsal surface (Fig. 217); clava entire and apically rounded (Fig. 219); mandible edentate (Fig. 218) .....	<i>OLYPUSA</i> (p. 307)
-	Forewing with setae on dorsal surface of costal cell restricted to a single line in apical half only; clava two- or three-segmented; mandible with two or three teeth .....	461
461 (460)	Clava apically rounded; eye not overreaching occipital margin .....	462
-	Clava with a strong oblique apical truncation; eye reaching occiput .....	463
462 (461)	Forewing with a complete hyaline fascia distal to venation, marginal vein clearly longer than stigmal (Figs 141, 222); mandible with three acute teeth (Fig. 221) .....	<i>SAPRENCYRTUS</i> (p. 336)
-	Forewing without a complete hyaline fascia distal to venation, marginal vein shorter than stigmal; mandible with one or two teeth and a truncation (Figs 121, 122) .....	<i>PSYLLAEPHAGUS</i> (p. 330)
463 (461)	Mesopleurum not posteriorly enlarged and not touching basal segment of gaster so that when thorax viewed from side hind coxa more or less broadly touches metapleurum and propodeum (as in Fig. 140); dorsum of thorax dull and not strongly metallic; clava white contrasting with dark funicle segments (Fig. 137); mandible tridentate .....	<i>PARENCYRTOMYIA</i> (p. 320)
-	Mesopleurum posteriorly enlarged and more or less touching basal segment of gaster so that when thorax viewed from side it clearly separates hind coxa from metapleurum and propodeum (as in Fig. 177); dorsum of thorax strongly shining purple or blue; flagellum unicolours and dark; mandible with one or two teeth and a truncation (Fig. 71) .....	<i>PARATETRALOPHIDEA</i> (p. 319)
464 (39)	Forewing with postmarginal vein much longer than stigmal .....	465
-	Forewing with postmarginal vein not longer than stigmal .....	466
465 (464)	Propodeum medially not longer than one-fifth length of scutellum; eye more or less naked, setae clearly shorter than diameter of a facet; infuscation of forewing diffuse and not forming a distinct pattern .....	<i>ENCYRTOIDEA</i> (p. 268)
-	Propodeum medially more than one-fifth as long as scutellum; eye with numerous short setae, each longer than diameter of a facet; infuscation of forewing moderately strong and forming a distinct pattern .....	<i>BORROWELLA</i> (p. 242)
466 (464)	Mesopleurum with anterior half more or less smooth and shiny and posterior half with distinct, clearly delimited shiny bottomed punctures .....	<i>PARASTENOTERYS</i> (p. 318)
-	Mesopleurum with similar sculpture in both anterior and posterior halves, usually entirely smooth or nearly so .....	467
467 (466)	Head and dorsum of thorax with conspicuous piliferous punctures of thimble-like appearance .....	<i>RHYTIDOTHORAX</i> (p. 333)
-	Head and dorsum of thorax with indistinct, shallow piliferous punctures and not of thimble-like appearance .....	468
468 (467)	Mesopleurum enlarged posteriorly so that it more or less touches basal segment of gaster so that when thorax viewed from side it separates hind coxa from metapleurum and propodeum (as in Figs 138, 177) .....	469
-	Mesopleurum not so posteriorly enlarged and not touching basal segment of gaster so that when thorax viewed from side the hind coxa is more or less broadly touching metapleurum and propodeum (as in Figs 139, 140) .....	471

- 469 (468) Clava not obliquely truncate, truncate surface shorter than ventral surface of clava (Fig. 220) ..... **TRICHOMASTHUS** (p. 346)
- Clava very strongly obliquely truncate, the truncate surface much longer than remainder of ventral surface of clava (Figs 67, 224) ..... 470
- 470 (469) Scutellum smooth and very shiny; forewing with marginal vein not or hardly longer than stigmal (Fig. 68); mandible with two teeth and a very broad truncation (Fig. 225) ..... **OVALOENCYRTUS** (p. 310)
- Scutellum with deep reticulate sculpture; marginal vein of forewing more than twice as long as stigmal (Fig. 192); mandible tridentate (Fig. 223) ..... **ECHTHROGONATOPUS** (p. 267)
- 471 (468) Forewing with marginal vein relatively short, not more than twice as long as stigmal ..... 472
- Forewing with marginal vein longer, at least three times as long as stigmal ..... 474
- 472 (471) Clava entire and obliquely truncate at apex ..... **ISODROMOIDES** (p. 289)
- Clava three-segmented and not obliquely truncate (although dorsal surface occasionally more strongly curved than ventral) ..... 473
- 473 (472) Clava with dorsal surface clearly more strongly curved than ventral surface; antennal toruli separated from mouth margin by much more than their own lengths ..... **MAYRIDIA** (p. 295)
- Clava with dorsal surface similarly curved to ventral surface; antennal toruli separated from mouth margin by not more than their own lengths . . . **AENASIELLA** (p. 224)
- 474 (471) Scutellum more or less flat with punctate-reticulate sculpture and matt; forewing with apex of stigmal vein separated from anterior wing margin by less than the maximum depth of uncus ..... **CHEILONEURUS** (p. 249)
- Scutellum clearly convex and with shallow reticulate sculpture and at least slightly shiny; forewing with apex of stigmal vein separated from anterior wing margin by more than maximum depth of uncus (Fig. 226) ..... **HYPERGONATOPUS** (p. 288)
- 475 (40) Forewing with marginal vein absent ..... **AMIRA** (p. 228)
- Forewing with marginal vein present ..... 476
- 476 (475) Hypopygium not reaching more than two-thirds along gaster; propodeal spiracle surrounded by dense white setae which continue along sides of propodeum and metapleurum to hind coxa which is also clothed in dense white setae ..... **MENISCOCEPHALUS** (p. 296)
- Hypopygium more or less reaching apex of gaster; propodeal spiracle not surrounded by dense white setae, or if so then these do not continue down sides of propodeum and metapleurum to hind coxa ..... 477
- 477 (476) Forewing with filum spinosum directed towards junction of submarginal and marginal veins so that it clearly converges with line of setae on proximal margin of linea calva (Fig. 127) ..... **CERCHYSIELLA** (p. 246)
- Forewing with filum spinosum absent, margins of linea calva more or less parallel (Fig. 235) ..... 478
- 478 (477) Frontoververtex at narrowest point about one-quarter head width ..... 479
- Frontoververtex at narrowest point at least one-third head width, usually much wider ..... 480
- 479 (478) Forewing with postmarginal vein longer than stigmal ..... **BLEPYRUS** (p. 242)
- Forewing with postmarginal vein not longer than stigmal ..... **AENASIUS** (p. 225)
- 480 (478) Forewing with marginal vein long, at least half as long as submarginal and at least three times as long as either the short stigmal or postmarginal veins, anterior margin of wing not incised at apex of costal cell (Fig. 237) ..... **METAPHAENODISCUS** (p. 297)
- Forewing with marginal vein short, not more than half as long as either postmarginal or stigmal veins and less than one-tenth as long as submarginal vein, anterior margin of wing incised at apex or costal cell (Fig. 235) ..... **CLADISCODES** (p. 251)
- 481 (41) Head in profile more or less evenly rounded anteriorly, not triangular; occipital margin sharp; mandible with two or three acute teeth ..... 482
- Head in profile triangular, face strongly inflexed at top of antennal scrobes (as in

- Fig. 72); occipital margin more or less rounded; mandible with one or two teeth and a truncation or four teeth ..... 488
- 482 (481) Clava with a strong oblique truncation (Figs 43, 239, 241) ..... 483
- Clava apically rounded ..... 486
- 483 (482) Hypopygium reaching apex of gaster; forewing with marginal vein absent (Fig. 240); frontovertex at narrowest point broader than length of scape
- LUTHERISCA** (p. 294)
- Hypopygium not reaching more than two-thirds along gaster; forewing with marginal vein present; frontovertex at narrowest point narrower than length of scape ..... 484
- 484 (483) Forewing with marginal vein not more than twice as long as broad, sensillae at apex of stigmal vein arranged symmetrically in a square, uncus absent (Figs 142, 183, 249) ..... **COPIDOSOMA** (p. 257)
- Forewing with marginal vein at least four times as long as broad, sensillae at apex of stigmal vein not arranged symmetrically and not in a square, uncus present (Fig. 226) ..... 485
- 485 (484) Clava about as long as pedicel and funicle together and darker than funicle, all funicle segments clearly transverse; mesoscutum with sparse white setae; scutellum fairly flat and with distinctly deeper reticulate sculpture than that on mesoscutum; mandible with two teeth and a truncation ..... **BAEOANUSIA** (p. 241)
- Clava not longer than funicle and concolorous; funicle segments subquadrate; mesoscutum with dark setae; scutellum fairly convex and not with deeper sculpture than mesoscutum; mandible tridentate ..... **HYPERGONATOPUS** (p. 288)
- 486 (482) Basal segment of gaster at least dorsally white or yellow and contrasting with the dark remainder of gaster ..... 487
- Gaster unicolorous, dark and shiny, not partly white or yellow ..... 488
- 487 (486) Infuscation of forewing restricted to a subapical fuscous streak (Fig. 245); setae on apical funicle segments normal; mandible tridentate ..... **COAGERUS** (p. 251)
- Infuscation of forewing more extensive with at least a broad complete fuscous fascia from apex of venation; apical funicle segments occasionally with flattened scale-like setae; mandible usually with one or two teeth and a truncation, rarely with three teeth ..... **CHEILONEURUS** (p. 249)
- 488 (481, 486) Forewing strongly infusate from apical one-third of submarginal vein to apex and enclosing at least three hyaline spots; head with a strong transverse line of dense silvery white setae below eyes and across face below angle of face
- EPITETRACNEMUS** (p. 273)
- Forewing with infuscation often rather weak and at most with only two hyaline spots in infusate area; transverse line of setae across face absent or with setae very sparse ..... 489
- 489 (488) Forewing with postmarginal vein clearly much longer than either marginal or stigmal veins, stigmal vein not or hardly shorter than marginal; mandible with two teeth and a truncation, never with four teeth ..... **ADELENCYRTOIDES** (p. 223)
- Forewing with postmarginal vein not or hardly longer than stigmal or marginal veins, stigmal vein usually much shorter than marginal; mandible with two teeth and a truncation or four teeth ..... **ADELENCYRTUS** (p. 223)
- 490 (43) Forewing with venation not reaching anterior margin of wing (Fig. 240); antennal toruli separated from mouth margin by about their own lengths; clava large and with a strong oblique truncation which is twice as long as remainder of ventral surface of clava (Fig. 239); mandible bidentate
- LUTHERISCA** (p. 294)
- Forewing with venation reaching anterior margin; antennal toruli less than their own lengths from mouth margin; clava usually with apex more or less rounded or transversely truncate, although occasionally with an oblique truncation, but this is only rarely longer than remainder of ventral surface of clava (*Neanagyris* spp.); mandible tridentate or with one or two teeth and a truncation ..... 491
- 491 (490) Forewing with postmarginal vein longer than stigmal ..... **ENCYRTOIDEA** (p. 268)
- Forewing with postmarginal vein not longer than stigmal ..... 492

- 492 (491) First funicle segment anelliform, the remainder subequal and subquadrate; forewing completely naked immediately below marginal vein at top of linea calva ..... **OVIDOENCYRTUS** (p. 312)
- First funicle segment only a little smaller than second, all funicle segments usually gradually enlarging distally; forewing with at least a few setae immediately below marginal vein at top of linea calva ..... 493
- 493 (492) Mandible with one or two teeth and a truncation; apex of hypopygium usually not reaching more than half way along gaster, although occasionally reaching apex ..... 494
- Mandible with three sharp teeth; hypopygium reaching more than half way along gaster and usually to more than five-sixths ..... 496
- 494 (493) Mesopleurum posteriorly enlarged and more or less touching basal segment of gaster so that when thorax viewed from side it clearly separates hind coxa from metapleurum and propodeum (Fig. 177); posterior margin of mesoscutum projecting backwards above axillae so that when thorax in resting position the axillae appear to be broadly separated (as in Fig. 44) ..... **OOENCYRTUS** (p. 309)
- Mesopleurum not posteriorly enlarged and not touching basal segment of gaster, in side view hind coxa more or less broadly touches metapleurum and propodeum (as in Figs 139, 140); median portion of posterior margin of mesoscutum not projecting above axillae so that with thorax in resting position axillae appear to meet (as in Fig. 42) ..... 495
- 495 (494) Clava with a very strong oblique truncation, the surface of which is clearly longer than remainder of ventral surface of clava ..... **NEANAGYRUS** (p. 303)
- Clava with apex more or less rounded ..... **PSYLLAEPHAGUS** (p. 330)
- 496 (493) Antennal toruli separated from mouth margin by at least nearly their own lengths; forewing with sensillae at apex of stigmal vein not arranged in a square, uncus present (Figs 247, 248) ..... 497
- Antennal toruli separated from mouth margin by less than half their own lengths; forewing with sensillae at apex of stigmal vein arranged symmetrically in a square, uncus absent (Figs 142, 183, 249) ..... 498
- 497 (496) Head and thorax bright metallic green with punctate-reticulate sculpture; scape clearly much shorter than minimum width of frontovertex; hypopygium not reaching more than three-quarters along gaster ..... **PARACHALCERINYS** (p. 315)
- Head and thorax often metallic but never bright green, with shallow reticulate sculpture; scape at least about as long as minimum width of frontovertex; hypopygium reaching apex of gaster ..... **COELOPENYRTUS** (p. 255)
- 498 (496) Antennal flagellum not unicolorous, consisting of at least a few white segments contrasting with dark remainder, clava apically transversely truncate ..... **PARALITOMASTIX** (p. 316)
- Antennal flagellum unicolorous; clava usually with rounded apex, although occasionally apically truncate ..... **COPIDOSOMA** (p. 257)
- 499 (44) Scutellum strongly convex and separated from axillae by deep grooves; face with strong transverse carina above antennal toruli ..... **ANANUSIA** (p. 231)
- Scutellum flat to moderately convex and separated from axillae by normal sutures; face without a strong transverse carina above antennal toruli ..... 500
- 500 (499) Forewing with postmarginal vein at least a little longer than stigmal (Figs 151, 243) ..... 501
- Forewing with postmarginal vein not longer than stigmal ..... 503
- 501 (500) Notaular lines absent; clava longer than funicle; frontovertex not more than one-third head width ..... **EURYRHOPALUS** (p. 277)
- Notaular lines present in anterior part of mesoscutum; clava shorter than funicle; frontovertex at least one-third head width ..... 502
- 502 (501) Forewing with marginal vein longer than stigmal (Fig. 151); malar space less than half as long as eye; sculpture of scutellum more or less same as that on mesoscutum, shallow and reticulate; mandible tridentate .... **PARACLAUSENIA** (p. 316)
- Forewing with marginal vein not longer than stigmal (Fig. 243); malar space longer than half length of eye; scutellum with deep longitudinally elongate

- reticulate sculpture (Fig. 244) which contrasts strongly with the reticulate sculpture of mesoscutum; mandible bidentate ..... **NEOCHARITOPUS** (p. 305)
- 503 (500) Forewing with parastigma clearly swollen (Fig. 242); mandible with two teeth; scutellum distinctly sculptured throughout ..... **COCCIDOXENOIDES** (p. 255)
- Forewing with parastigma not swollen, or if slightly swollen than mandible has three teeth and scutellum has at least apical half smooth and shiny and devoid of sculpture ..... 504
- 504 (503) Face largely green with a contrasting yellow pattern ..... **ZARHOPALOIDES** (p. 349)
- Head either completely yellow or darker and without a contrasting pattern .... 505
- 505 (504) Scutellum with at least shallow sculpture throughout and without lateral, longitudinal grooves behind axillae; forewing with filum spinosum directed towards junction of marginal and stigmal veins and thus not converging with setae of proximal margin of lineae calva (Figs 248, 249) ..... 506
- Scutellum with at least apical half smooth and shiny and devoid of sculpture and also with a lateral, longitudinal groove behind each axilla; forewing with filum spinosum, if distinct, directed towards junction of submarginal and marginal veins and thus converging with setae of proximal margin of lineae calva (Figs 127, 250, 251) ..... 509
- 506 (505) Hypopygium extending past apex of last tergite and thus clearly visible in dorsal view (similar to Fig. 125); ovipositor slightly exerted and apically slightly downcurved ..... **EPIBLATTICIDA** (p. 272)
- Hypopygium not quite or only just reaching apex of gaster and not visible in dorsal view; ovipositor not exerted, or if so then apex is not downcurved ... 507
- 507 (506) Clava solid ..... **COPIDOSOMA** (p. 257)
- Clava three-segmented ..... 508
- 508 (507) Frontovertex very narrow, not more than one-quarter head width; mouth opening small, less than twice as wide as frontovertex or less than half head width; clava with a distinct oblique apical truncation ..... **TRJAPITZINELLUS** (p. 346)
- Frontovertex at least one-third as wide as head, or if narrower then mouth opening much wider than frontovertex or at least about half as wide as head; clava only seldom obliquely truncate ..... **COELOPENECYRTUS** (p. 255)
- 509 (505) Eye relatively small and clearly not reaching occipital margin which is more or less rounded; eye length never more than minimum width of frontovertex
- ZAOMMOENCYRTUS** (p. 349)
- Eye larger and more or less reaching occipital margin which is sharp; length of eye greater than minimum width of frontovertex ..... **CERCHYSIELLA** (p. 246)
- 510 (44) Clava solid with apex rounded ..... **AUSTRALANUSIA** (p. 236)
- Either clava three-segmented or if solid then apex strongly obliquely truncate . 511
- 511 (510) Mesopleurum posteriorly enlarged and more or less touching basal segment of gaster so that when thorax viewed from side it clearly separates hind coxa from metapleurum and propodeum (Fig. 177) ..... 512
- Mesopleurum not so enlarged and not touching basal segment of gaster so that when thorax viewed from side hind coxa more or less broadly touches metapleurum and propodeum (as in Figs 139, 140) ..... 515
- 512 (511) Forewing with postmarginal vein clearly longer than either stigmal or marginal veins ..... **ENCYRTOIDEA** (p. 268)
- Forewing with either marginal or stigmal vein longer than postmarginal vein .. 513
- 513 (511) Forewing with marginal vein not more than twice as long as broad; posterior margin of mesoscutum projecting slightly backwards above axillae so that when thorax in resting position axillae appear to be broadly separated (as in Fig. 44) ..... 514
- Forewing with marginal vein more than twice as long as broad; posterior margin of mesoscutum not projecting above axillae so that axillae more or less touching medially when thorax is in resting position (as in Fig. 42) ..... 515
- 514 (513) Clava very large, much wider than funicle and with a very strong oblique truncation, longer than pedicel and funicle together (Fig. 202)
- AGARWALENCYRTUS** (p. 226)
- Clava relatively smaller, rarely longer than funicle and apex generally more or

- less rounded, never strongly obliquely truncate (Fig. 246) . . . . . **OOENCYRTUS** (p. 309)
- 515 (511, 513) Occipital margin more or less rounded, or if appearing sharp then either head triangular in profile, the face strongly inflexed at top of toruli (as in Fig. 72) or forewing with postmarginal vein much more than one-sixth longer than stigmal . . . . . 516
- Occipital margin sharp; head in profile anteriorly more or less evenly rounded; forewing with postmarginal vein not more than one-sixth longer than stigmal . . . . . 520
- 516 (515) Mandible with three acute teeth; scutellum slightly convex and at least about as long as broad . . . . . **ACHALCERINYS** (p. 220)
- Mandible with four teeth or with one or two teeth and a truncation; scutellum usually flat and distinctly broader than long . . . . . 517
- 517 (516) Either forewing with postmarginal vein longer than stigmal or mandible with four teeth . . . . . 518
- Forewing with postmarginal vein not longer than stigmal; mandible with one or two teeth and a truncation . . . . . 519
- 518 (517) Forewing with postmarginal vein clearly much longer than either marginal or stigmal veins, stigmal vein not or hardly shorter than marginal; mandible with two teeth and a truncation . . . . . **ADELENCYRTOIDES** (p. 223)
- Postmarginal vein of forewing not or hardly longer than either stigmal or marginal veins, stigmal vein usually much shorter than marginal; mandible with four teeth (Fig. 116) . . . . . **ADELENCYRTUS** (p. 223)
- 519 (517) Forewing with linea calva interrupted on dorsal surface by at least two lines of setae . . . . . **COCCIDENCYRTUS** (p. 253)
- Forewing with linea calva neither interrupted nor closed on dorsal surface . . . . . **EPITETRALOPHIDEA** (p. 273)
- 520 (515) Forewing with a distinct hairless streak from apex of postmarginal vein to apex of stigmal vein and extending slightly into disc (Fig. 252) . . . . . **TASSONIA** (p. 341)
- Forewing without a hairless streak at apex of venation . . . . . 521
- 521 (520) Mandible with one or two teeth and a truncation . . . . . 522
- Mandible with three or four sharp teeth, if tridentate then uppermost tooth may be short . . . . . 527
- 522 (521) Clava with a strong oblique apical truncation, the truncate surface much longer than remainder of ventral surface of clava . . . . . 523
- Clava without an oblique apical truncation or if so then truncate surface is much shorter than remainder of ventral surface of clava . . . . . 524
- 523 (522) Forewing with marginal vein at least about four times as long as broad and clearly much longer than stigmal . . . . . **BAEOANUSIA** (p. 241)
- Forewing with marginal vein only a little longer than broad and less than half as long as stigmal . . . . . **NEANAGYRUS** (p. 303)
- 524 (522) Setae on eye short and inconspicuous, translucent and not or hardly longer than diameter of a facet . . . . . 525
- Eye clothed in very long, conspicuous, dark setae, each at least twice as long as diameter of a facet . . . . . 527
- 525 (524) Forewing with stigmal vein at least nearly three times as long as marginal; head and thorax generally bright metallic green or blue-green . . . . . **PSYLLAEPHAGUS** (p. 330)
- Forewing with stigmal vein less than twice as long as marginal; head and thorax dark purple-brown with green or brassy reflections, occasionally mesoscutum bright metallic green, but head and scutellum never strongly shiny . . . . . 526
- 526 (525) Metapleurum clothed with distinct white setae extending to base of hind coxa which is clothed in moderately dense conspicuous setae; base of gaster yellow contrasting with remainder which is dark and shiny . . . . . **DIAPHORENCYRTUS** (p. 263)
- Metapleurum without any conspicuous white setae; hind coxae with only a few sparse inconspicuous setae; gaster completely dark and shiny without a basal yellow band . . . . . **SYRPHOPHAGUS** (p. 338)
- 527 (521, 524) Mesoscutum metallic with contrasting white setae; scutellum more or less flat with fine reticulate sculpture giving it a matt appearance which strongly contrasts with metallic colour of mesoscutum; clava strongly obliquely truncate (Fig. 224) . . . . . **ECHTHROGONATOPUS** (p. 267)

- Mesoscutum with dark setae; scutellum at least slightly convex although occasionally with fine reticulate sculpture which gives it a matt appearance; clava usually more or less rounded, although occasionally with a strong oblique truncation ..... 528
- 528 (527) Eye naked or with very short inconspicuous, translucent setae which are each shorter than the diameter of a facet ..... 529
- Eye clothed in dense conspicuous, pale or dark setae, each at least as long as diameter of a facet ..... 531
- 529 (528) Forewing with sensillae at apex of stigmal vein arranged symmetrically in a square, uncus absent (Figs 142, 183, 249); clava usually solid and with an oblique apical truncation (Fig. 241), although occasionally rounded
- COPIDOSOMA** (p. 257)
- Forewing with sensillae at apex of stigmal vein not arranged in a square, uncus present; clava three-segmented and with apex rounded ..... 530
- 530 (529) Scutellum with deep reticulate sculpture contrasting with shallow sculpture of mesoscutum, latter dull purple and not shiny, scutellum green; mandible with a long middle tooth and very short inner and outer teeth almost appearing unidentate; ovipositor not visible externally ..... **RHYTIDOTHORAX** (p. 333)
- Scutellum with similar sculpture to mesoscutum, both very shiny and metallic; mandible with three short subequal teeth; ovipositor slightly but distinctly exerted ..... **STENOTEROPSIS** (p. 338)
- 531 (528) Scutellum with very shallow reticulate sculpture, almost smooth .... **EXORISTOBIA** (p. 277)
- Scutellum with fine striate-reticulate sculpture (Fig. 254) ..... 532
- 532 (531) All funicle segments transverse (Fig. 253) ..... **HALIGRA** (p. 281)
- Only the first funicle segment not longer than broad, remainder each longer than broad ..... **LAMENNAISIA** (p. 292)

## Notes on genera

### **ACEROPHAGUS** Smith

(Key couplets: 62, 66. Fig. 23)

*Acerophagus* Smith, 1880: 83. Type-species: *Acerophagus coccois* Smith, by monotypy.

*Rhopoideus* Howard, 1898b: 235. Type-species: *Rhopoideus citrinus* Howard, by monotypy.

**DISTRIBUTION AND SPECIES.** Sixteen species, New World; three species from review area: *coccois* Smith; Rosen (1969: 57) (Hawaiian Is.), *solidus* Hayat (1981b: 13) (India) and *texanus* (Howard; Rosen, 1969: 63) (Hawaiian Is.).

**REFERENCES.** World revision: Rosen (1969); see also Beardsley (1976).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** *Pseudectroma bryanti* Girault may also run here in the key since it is possible that the clava is entire and not two-segmented. We are retaining it in *Pseudectroma* pending examination of freshly collected material.

*Acerophagus* is very close to *Pseudaphycus*, *Pseudectroma*, *Indaphycus* (tribe Aphycini, subtribe Aphycina) and possibly also *Mozartella*, from all of which it can be separated using the characters given in the key. It is possibly closest to *Pseudectroma* and can be most reliably separated from this genus by the relatively more narrow frontovertex (see comments under *Pseudectroma*).

### **ACHALCERINYS** Girault

(Key couplet: 516)

*Achalcerinys* Girault, 1915a: 98. Type-species: *Achalcerinys triclavata* Girault, by original designation.

*Echthrobacomyia* Girault, 1920d: 142. Type-species: *Echthrobacomyia niveipes* Girault, by monotypy.

Syn. n.

**DISTRIBUTION AND SPECIES.** Four species, possibly all synonymous, Neotropics (BMNH), Old World including Afrotropical region; all four species from review area: *gorodkovi* (Myartseva, 1983: 66) (**comb. n.** from *Parasyrpophagus*) (India), *lindus* (Mercet, 1921: 271) (**comb. n.** from *Parasyrpophagus*) (India), *niveipes* (Girault, 1920d: 142) (**comb. n.** from *Echthrobaomyia*) (Australia) and *triclavata* Girault (1915a: 98) (Australia), also further undetermined material from S. China and Vietnam to Papua New Guinea and Fiji (BPBM).

**BIOLOGY.** Unknown.

**COMMENTS.** The holotypes of *Achalcerinys triclavata* (QM) and *Echthrobaomyia niveipes* (QM) have been examined and certainly are congeneric. They may also be conspecific but there are some slight differences in setation and sculpture of the thorax and in the relative length of the postmarginal vein of the forewing. *Achalcerinys lindus* (Mercet) may also be synonymous. *Achalcerinys gorodkovi* (Myartseva) from Europe and India has dark hind femora, but probably it is merely a colour form of *lindus* since there does not appear to be any consistent morphological difference.

The genus can probably be placed best in the tribe Cheiloneurini. It is superficially similar to *Mahencyrtus* but differs in lacking a strongly expanded parastigma, shorter propodeum and generally much paler legs (the legs of *Achalcerinys* are completely yellow or with the hind femora dark, those of *Mahencyrtus* are usually more extensively darkened). The head also has a characteristic groove connecting the occipital foramen to the centre of the occipital margin behind the ocelli.

### **ADEKTITOPUS gen. n.**

(Key couplets: 242, 264. Figs 148, 160, 161, 255–263)

Type-species: *Adektitopus gordhi* sp. n. Gender: masculine.

♀. *Head.* In facial view a little broader than long, in profile about twice as long as broad and anteriorly gradually curved. Eye with posterior margin very slightly concave, about one-half longer than broad and with numerous fairly conspicuous translucent setae and more or less overreaching occipital margin which is sharp only behind ocelli. Malar space distinctly to a little less than one-third length of eye and with malar sulcus present. Frontoververtex about one-third head width; ocelli approximately forming a right angle, posterior ocellus separated from occipital margin by its own to twice its diameter and from eye margin by a little less than twice its diameter. Antennal scrobes very shallow, meeting or not meeting dorsally and nearly reaching half way to anterior ocellus from antennal toruli; antennal torulus separated from mouth margin by slightly less than its own length and from other torulus by slightly less than to about its own length, its dorsal margin about level with ventral margins of eyes; clypeal margin broadly excised below toruli. Antennal scape cylindrical, much longer than minimum width of frontoververtex, about nine times as long as broad, pedicel conical, about as long as or slightly longer than the funicle segments which are all longer than broad, cylindrical and gradually widening distally; clava three-segmented about half as long as funicle and with apex more or less rounded, outer suture very oblique and strongly converging with inner suture ventrally so that they nearly meet (Figs 255, 256); longitudinal sensillae on all but first one or two flagellar segments. Frontoververtex with moderately deep, raised reticulate sculpture becoming more squamiform on lower parts of face and on interantennal prominence; frontoververtex clothed in sparse, short, translucent setae, occasionally piliferous punctures large and giving the frontoververtex a thimble-like appearance. Mandible with three teeth, the uppermost tooth shortest and blunt, maxillary palpus four-segmented, labial palpus three-segmented.

*Thorax.* In side view moderately deep with metapleurum and propodeum narrowly in contact with hind coxa, dorsally with both mesoscutum and scutellum convex, almost flat. In dorsal view posterior margin of pronotum quite concave; visible part of mesoscutum about twice as broad as long, with notaular lines present (although in dry-mounted material rather obscure) and reaching about half way across mesoscutum; axillae virtually meeting but appearing separate because posterior margin of mesoscutum projects a little backwards medially; scutellum about as broad as long and about as long as mesoscutum, with apex blunt; propodeum medially about one-quarter to one-fifth as long as scutellum. Mesoscutum with shallow to fairly deep, raised squamiform-reticulate sculpture, scutellum with distinctly deeper, raised, more or less fine vermiculate-reticulate sculpture; propodeum medially quite smooth; mesopleurum almost smooth

but with shallow, raised, reticulate sculpture; dorsum of thorax with numerous, moderately long, translucent, recumbent setae. Forewing hyaline with a faint hint of yellowish or faintly infusate, wing two and one-half to nearly three times as long as broad; linea calva not interrupted but more or less closed near posterior margin of wing, filum spinosum absent; submarginal vein with an apical hyaline break, with parastigma clearly swollen, much broader than proximal two-thirds of vein, marginal vein about seven to nine times as long as broad, a little longer than postmarginal which is distinctly longer than stigmal; costal cell about 16 times as long as broad and with a single line of setae dorsally in distal half. Hindwing hyaline, about three-quarters as long as forewing, five times as long as broad, with marginal fringe about one-third maximum wing width. Mid tibial spur about as long as basal mid tarsal segment.

*Gaster*. About as long as thorax, cercal plates in anterior half, paratergites present but membranous, last tergite about two-thirds to three-quarters as long as mid tibia, hypopygium reaching apex of gaster, ovipositor slightly exerted and about as long as to one-third longer than mid tibia, gonostyli more or less free and about one-fifth as long as ovipositor.

♂. Differs from female as follows.

*Head*. Eye not quite reaching occiput, occipital margin more or less acute. Malar space about half as long as eye; frontovertex nearly two-thirds head width; ocelli relatively larger, posterior ocellus separated from occipital margin by about half its diameter and from eye margin by about its diameter; antennal scrobes reaching more than half way from toruli to anterior ocellus; antennal torulus separated from mouth margin by slightly more than its own length and from other torulus by slightly less, its ventral margin slightly below the ventral margins of the eyes; antennal scape a little shorter than minimum width of frontovertex, cylindrical, about five times as long as broad; pedicel conical, slightly longer than broad, clearly several times shorter than any of the funicle segments which are at least three times as long as broad, setae on flagellum slightly longer than diameter of segments; clava in card-mounted specimens appearing to be entire, but in slide-mounted specimens two-segmented, although suture is incomplete.

*Thorax*. In side view metapleurum and propodeum broadly in contact with hind coxa; forewing slightly broader, about two and one-half times as long as broad; linea calva open; marginal vein about seven times as long as broad, slightly shorter than postmarginal, both clearly longer than stigmal; costal cell a little more than 20 times as long as broad.

*Gaster*. Shorter than thorax; genitalia with hooks on the digiti, aedeagus about one-third as long as mid tibia or one-third longer than mid tibial spur.

COMMENTS. The genus belongs to the tribe Charitopidini (Tetracneminae) and can be separated from other genera on the following combination of characters: incomplete notaular lines, sculpture of thorax, lightly infusate forewings, postmarginal vein longer than stigmal, relatively well-advanced cercal plates and long last tergite, and the unbranched antenna in the male.

The type-species of the genus is named in honour of Dr Gordon Gordh (UCR).

### *Adektitopus gordhi* sp. n.

(Figs 148, 160, 161, 256–263)

♀ Length: 1.24–1.56 mm (holotype, 1.56 mm).

*Colour*. Head black with faint greenish or bluish metallic sheen, antenna with scape honey yellow with apex slightly darker, pedicel and flagellum from entirely pale brownish yellow to entirely dark brown, the basal segments sometimes paler, clava dark brown; pronotum, axilla and tegula black with a slight purple sheen, mesoscutum dark metallic blue with some purple reflections, scutellum basally dark purple, gradually becoming blue and then green towards the apex; metanotum more or less orange-brown, propodeum and mesopleurum strongly dark metallic purple; fore coxa dark brown with purple reflections, mid coxa basally dark brown, remainder of legs and apex of mid coxa honey yellow; forewing mostly hyaline but with faint yellowish suffusion distal to parastigma, occasionally a faint longitudinal fuscous streak in apical one-half of wing; gaster mostly orange-yellow, the last tergite to a greater or lesser extent dark brown; visible part of gonostyli dark brown.

*Head*. In profile very slightly less than twice as long as broad; posterior ocellus nearly one and one-half times its own length from occipital margin; antennal scrobes not meeting dorsally; antennal toruli separated from each other by about three-quarters their own lengths; sculpture of frontovertex as in Fig. 258. Relative measurements (holotype): head width (frontal view) 84, head length 75, minimum width of frontovertex 15, malar space 18, eye length 59, eye width 41, POL 14, OOL 2, scape length 49, other proportions of antenna as in Fig. 256.

*Thorax.* Mesoscutum with shallow, raised, squamiform-reticulate sculpture (Fig. 160); scutellum with much deeper vermiculate-reticulate sculpture (Fig. 161). Relative measurements of forewing (holotype): length 73, width 25, other proportions as in Figs 148, 257; of hindwing: length 57, width 11.

*Gaster.* Relative lengths (paratype): ovipositor 60, gonostylus 11, last tergite 37, [mid tibia 45]. Hypopygium as in Fig. 259.

♂ Length: 0.87–1.03 mm.

*Colour.* Head blackish, weakly metallic green, antennal scape testaceous yellow, darker apically; pedicel and flagellum dark brown, apex of pedicel slightly paler; mesoscutum dark brown, weakly metallic green or bluish with some purple reflections; scutellum metallic green; propodeum and mesopleurum dark brown with a purplish sheen; metapleurum slightly yellowish in colour; legs as for female except fore and mid coxae largely yellow; gaster mostly dark brown but ventrally and basally yellowish; forewing very faintly infumate from level with parastigma to apex.

*Head.* Frontoververtex with moderately deep, raised, reticulate sculpture, this becoming shallower and more longitudinally elongate on lower parts of face, particularly genae. Relative measurements (paratype): head width (facial view) 53, head length 47, minimum frontoververtex width 30, malar space 13, eye length 28, eye width 20, POL 11, OOL 7, scape length 17, other proportions of antenna as in Fig. 260.

*Thorax.* Mesoscutum with shallow, raised, reticulate sculpture; scutellum with distinctly deeper (although shallower than in female), raised, reticulate sculpture. Relative measurements (paratype): forewing length 141, forewing width 55, other proportions as in Fig. 261.

*Gaster.* Relative lengths (paratype): aedeagus 34, [mid tibial spur 26]. Genitalia as in Figs 262, 263.

DISTRIBUTION. India.

BIOLOGY. Unknown.

#### MATERIAL EXAMINED

Holotype ♀, **India:** Tamil Nadu, Mudumalai Animal Sanctuary, 23–24.x.1979 (*J. S. Noyes*) (BMNH).

Paratypes. **India:** 7 ♀, 3 ♂, same data as holotype; 1 ♀, Maharashtra, Elephanta (caves near Bombay), 28.x.1979 (*M. Hayat*). (BMNH, HC, USNM, ZI, PPRI.)

COMMENTS. A further four species, all from India, can be separated by the female coloration and relative lengths of the antennal segments, general body colour, especially legs and gaster, relative lengths of malar space, length of head in side view, distance of ocelli from occipital margin, whether antennal scrobes meet dorsally, the sculpture of the frontoververtex, the relative distance separating the antennal toruli, sculpture of dorsum of thorax, strength of forewing infuscation, relative lengths of ovipositor and last gastral tergite to mid tibia; in the male they may be distinguished by leg coloration and sculpture of the head and thorax.

#### *ADELENCYRTOIDES* Tachikawa & Valentine

(Key couplets: 489, 518)

*Adelencyrtoides* Tachikawa & Valentine, 1969b: 548. Type-species: *Adelencyrtoides novaezealandiae* Tachikawa & Valentine, by original designation.

DISTRIBUTION AND SPECIES. One species *novaezealandiae* Tachikawa & Valentine (1969b: 548) (New Zealand, Chatham I.); possibly also several other species from New Zealand (BMNH, DSIR).

BIOLOGY. Parasites of Diaspididae (Homoptera).

COMMENTS. This genus will be dealt with in more detail in a paper in preparation on the New Zealand Encyrtidae. It may contain several other species but the generic status of most of these is not yet certain and many may be attributable to other, as yet, undescribed genera.

The genus is placed in the tribe Habrolepidini, subtribe Habrolepidina and can be separated from other related genera using the key provided by Tachikawa & Valentine (1969b).

#### *ADELENCYRTUS* Ashmead

(Key couplets: 193, 247, 329, 351, 440, 489, 518. Fig. 116)

*Adelencyrtus* Ashmead, 1900b: 401. Type-species: *Encyrtus chionaspidis* Howard, by original designation.

*Epiencyrtoides* Girault, 1915a: 108. Type-species: *Epiencyrtoides quadridentatus* Girault, by original designation.

*Rotrencyrtus* Risbec, 1958: 39. Type-species: *Rotrencyrtus depressus* Risbec, by monotypy.

DISTRIBUTION AND SPECIES. Twenty-five species, cosmopolitan; 19 from review area: *aulacaspidis* (Brèthes; Mercet, 1921: 294) (New Zealand), *axillaris* (Girault, 1915a: 108) (Australia), *bifasciatus* (Ishii; Tachikawa, 1963: 163) (India, Bangladesh, Taiwan, Hawaiian Is.), *bimaculatus* Alam; Hayat *et al.* (1975: 85) (India), *chionaspidis* (Howard; Compere & Annecke, 1961: 52) (Sri Lanka), *clavatus* Hayat, Alam & Agarwal (1975: 83) (India), *coxalis* Hayat, Alam & Agarwal (1975: 78) (India), *funicularis* Hayat, Alam & Agarwal (1975: 80) (India), *longiclavatus* Hayat, Alam & Agarwal (1975: 84) (India), *mayurai* (Subba Rao, 1957: 380) (**comb. n.** from *Anabrolepis*) (India), *minutus* (Girault, 1915a: 177) (**comb. n.** from *Epitetralophidea*) (Australia), *moderatus* (Howard; Noyes, 1979: 144) (Pakistan, India), *oceanicus* (Doutt, 1951: 501) (**comb. n.** from *Anabrolepis*) (Caroline Is., Mariana Is.), *odonaspidis* Fullaway (1913a: 27) (Hawaiian Is.), *quadridentatus* (Girault, 1915a: 108) (Australia), *quadriguttus* (Girault; Hayat, 1978: 33) (**comb. n.** from *Epitetracnemus*) (India), *quinquedentatus* (Girault, 1929a: 3) (**comb. n.** from *Epiencyrtoides*) (Australia), *shafeei* Hayat, Alam & Agarwal (1975: 84) (India), *simmondsi* Compere (1947b: 281) (Australia), also several other unidentified species from throughout the region (BMNH, BPBM, CNC, AMNH).

REFERENCES. Compere & Annecke (1961: 49–58); review of Indian species: Hayat *et al.* (1975: 76–87).

BIOLOGY. Parasites of Diaspididae (Homoptera).

COMMENTS. *Encyrtus solidus* Howard, described from the male sex only, has been incorrectly placed in *Adelencyrtus* (Schmiedeknecht, 1909: 253). The holotype ♂ (USNM) has been examined, but its generic placement remains uncertain.

Two or three undescribed species from the area extending from Borneo and the Philippines to the New Hebrides appear to form a distinct group. This group is characterised by each species being relatively much larger in size (at least about 1.5 mm long), having all antennal segments at least about as long as broad and more deeply infuscate forewings. We do not consider these characters to be sufficient for separate generic status.

The genus belongs to the tribe Habrolepidini, subtribe Habrolepidina (Encyrtinae) and is very closely related to *Epitetracnemus*. The two genera are not at all easy to distinguish and it is our view that further study will show that they should be considered synonymous. However, for the present we are retaining the two as distinct genera, but only on the basis of the presence or absence of a line of silvery setae across the face and the pattern and strength of infuscation of the forewings (see key). We do not consider that the mandibles are reliable in separating the two genera since the difference between a quadridentate mandible and one with two teeth and a truncation is not very great (see Tachikawa, 1963: fig. 70). Head shape also does not appear to be a good character since this can vary significantly. The males of the Habrolepidini all have a two-segmented funicle and a long unsegmented clava and are extremely difficult to separate. A key to females of some of the genera included in this subtribe is also given by Tachikawa & Valentine (1969b).

### AENASIELLA Girault

(Key couplets: 142, 204, 473. Fig. 76)

*Aenasiella* Girault, 1914a: 33. Type-species: *Aenasiella brachyscelidis* Girault, by original designation.

DISTRIBUTION AND SPECIES. Seven species, all Australian: *apiomorphae* Girault (1915a: 80), *australia* Girault (1917b: 35), *brachyscelidis* Girault (1914a: 33), *eucalypti* (Dodd, 1917: 354) (**comb. n.** from *Coccidencyrtus*), *lunulata* (Girault, 1915a: 140) (**comb. n.** from *Coccidoxenus*), *ovi* Girault (1925a: 2) and *sidneyi* (Girault, 1926b: 59) (**comb. n.** from *Encyrtioidea*).

BIOLOGY. Parasites of *Apiomorpha* galls (Homoptera: Eriococcidae) on *Eucalyptus*. Also

recorded as a parasite of eggs of a longicorn beetle (Coleoptera) on *Eucalyptus* but this is possibly incorrect.

COMMENTS. The holotype of *Coccidencyrtus eucalypti* Dodd has not been examined but the description of that species indicates that it must be closely related to *brachyscelidis*.

The genus is very close to *Psyllaephagus* (tribe Trechnitini, subtribe Metaprionomitina) and can virtually only be separated reliably from this genus by having three teeth on the mandible instead of two teeth and a truncation, although the difference here is not always very distinct (compare Figs 75, 76). The marginal vein of the forewing is always clearly longer than broad, whereas in *Psyllaephagus* it is almost always more or less quadrate.

### **AENASIOIDEA** Girault

(Key couplet: 167)

*Aenasioidea* Girault, 1911: 171. Type-species: *Aenasioidea latiscapus* Girault, by original designation.

DISTRIBUTION AND SPECIES. Eleven species, Holarctic, Afrotropical; only one species included here: *aligerhini* (Girault, 1932a: 5) (**comb. n.** from *Aphycus*) (Australia), also one undetermined species reared from *Ceroplastes ceriferus* (Fabricius) from the Philippines (USNM).

REFERENCES. Timberlake (1916: 579–585), Tachikawa (1963: 194–195).

BIOLOGY. Parasites of Kermesidae and Coccidae (Homoptera).

COMMENTS. The genus is extremely close to *Metaphycus* (tribe Aphycini, subtribe Paraphycina) and differs in having the hypopygium reaching the apex of the gaster, the usually relatively long funicle segments and characteristic shape of the ventral margin of the scape.

### **AENASIUS** Walker

(Key couplets: 129, 479)

*Aenasius* Walker, 1846: 181. Type-species: *Encyrtus hyettus* Walker, by original designation.

*Pseudanasius* Hayat, Alam & Agarwal, 1975: 21. Type-species: *Pseudanasius clavus* Hayat, Alam & Agarwal, by original designation.

DISTRIBUTION AND SPECIES. Twenty-nine species, mainly New World but also Afrotropical; only one species from this area: *advena* Compere; Kerrich (1967: 207) (Pakistan, India, Bangladesh, Malaysia, Philippines, Solomon Is., New Caledonia, Samoa, Fiji, Loyalty Is., Hawaiian Is.), also one undescribed species from India (BMNH).

REFERENCE. Revision: Kerrich (1967).

BIOLOGY. Parasites of Pseudococcidae (Homoptera).

COMMENTS. The undescribed species from India is intermediate between *Neodiscodes* and *Aenasius*, but we place it in the present genus because of the relatively broader frontovertex (about one-quarter head width).

Trjapitzin (1973) places *Aenasius* in the subtribe Aenasiina of the tribe Rhinoencyrtini which must be incorrect, since *Aenasius* (and thus the Aenasiina) belongs in the Tetracneminae whilst *Paratetracnemoidea* (= *Rhinoencyrtus*) must belong in the Encyrtinae (see comments under *Paratetracnemoidea*). The subtribe Aenasiina should now be given tribal status, i.e. Aenasiini Kerrich, 1967 (**stat. n.**) since the oldest name previously applied to the group, *Tetralophidea* Howard. The tribe Aenasiini thus contains the following genera: *Aenasius*, *Blepyrus* *Chalcaspis*, *Euryrhopalus*, *Metaphaenodiscus*, *Monodiscodes* Hoffer and *Neodiscodes* (Aenasiini = *Neodiscodini* Trjapitzin, 1973 **syn. n.**). *Aenasius* is nearest to *Neodiscodes* and *Chalcaspis* and can best be separated from these genera using Kerrich's key (1967: 188–190), although it is our opinion that further study will show that these three genera should be considered synonymous.

**AENASOMYIELLA** Girault

(Key couplet: 177)

*Aenasomyiella* Girault, 1915a: 93. Type-species: *Aenasomyiella coleridgei* Girault, by original designation.

*Zaomommoencyrtus* Girault, 1917g: 143. Type-species: *Zaomommoencyrtus poeta* Girault, by original designation. **Syn. n.**

**DISTRIBUTION AND SPECIES.** Three species, all Australian: *cervicineta* Girault (1922e: 151), *coleridgei* Girault (1915a: 93) and *poeta* (Girault, 1917g: 143) (**comb. n.** from *Zaomommoencyrtus*).

**BIOLOGY.** Doubtfully reared from a psyllid (Homoptera, Psyllidae) nymph under bark of *Eucalyptus*.

**COMMENTS.** The three species included here are very close but can be separated from each other by the relative position, shape and size of the purple spot on the scape: at apex only – *poeta*; restricted to basal half or so – *coleridgei*; extending from base along ventral margin nearly to apex of scape – *cervicineta*.

The genus is very close to *Metaphycus* (tribe Aphycini, subtribe Paraphycina) and can be separated by the two-segmented clava, relatively shorter scape, i.e. not or hardly longer than the malar space, uninterrupted lineal calva and characteristic purplish spot on outer surface of scape.

**AGARWALENCYRTUS** Hayat

(Key couplets: 393, 514. Figs 202, 203)

*Agarwalencyrtus* Hayat, 1981b: 15. Type-species: *Coccidencyrtus citri* Agarwal, by original designation.

**DISTRIBUTION AND SPECIES.** One species, Afrotropical, Oriental and Australasian: *citri* (Agarwal; Hayat, 1981b: 15) (India, Bangladesh, Hong Kong, Java and Solomon Is.), probably a second species from Taiwan (BPBM) which differs from *citri* in the relative position of the ocelli and proportions of the antennal segments.

**BIOLOGY.** Recorded as a parasite of *Planococcus citri* (Risso) (Homoptera, Pseudococcidae) by Agarwal (1965) but some material (BMNH) reported as being reared from Pipunculidae (Diptera).

**COMMENTS.** The type-species appears to vary quite considerably in colour, some specimens being almost entirely reddish orange whilst others are almost entirely black. This variation in colour does not appear to be related to distribution.

The genus is probably closely related to *Ooencyrtus* (tribe Microteryni, subtribe Ooencyrtina) and can be easily separated by the relatively large, obliquely truncate clava and strongly transverse funicle segments.

**AGENIASPIS** Dahlbom

(Key couplet: 188)

*Ageniaspis* Dahlbom, 1857: 293. Type-species: *Encyrtus fuscicollis* Dalman, by designation of Ashmead (1904c: 303).

*Leuroceroides* Girault, 1915a: 114. Type-species: *Leuroceroides niger* Girault, by original designation. **Syn. n.**

*Microrhopus* Girault, 1932b: 1. Type-species: *Microrhopus striatithorax* Girault, by monotypy. **Syn. n.**

**DISTRIBUTION AND SPECIES.** Nine species, cosmopolitan; three from review area: *citricola* Loginovskaya (1983: 610) (Vietnam), *nigra* (Girault, 1915a: 114) (**comb. n.** from *Leuroceroides*) (Australia) and *striatithorax* (Girault, 1932b: 1) (**comb. n.** from *Microrhopus*), also further undetermined specimens from Papua New Guinea (BPBM).

**BIOLOGY.** Polyembryonic parasites of larvae of Yponomeutidae (Lepidoptera).

COMMENTS. *Ageniaspis nigra* and *striatithorax* are extremely close and may eventually prove to be synonymous when freshly collected material can be carefully compared with the types of the two species.

In his description of *Microrhopus striatithorax*, Girault did not state that the genus *Microrhopus* was being described as new. It is here taken as an available name since the species epithet is valid (under Article 11g(ii) of the *Code of Zoological Nomenclature*) and the generic name is not unavailable for reasons of homonymy.

Trjapitzin (1973b) places the genus in the subtribe Ageniaspidiina, tribe Copidosomatini. Where their biology is known, all included species are polyembryonic parasites of Lepidoptera. However, further study may show that the Ageniaspidiina are in fact not as closely related to the Copidosomatina as their biology suggests. This is indicated by the difference in forewing venation (notably the arrangement of the sensillae at the apex of the stigmal vein, and the long postmarginal vein) and structure of the gaster (notably the ovipositor). They may in fact be more closely related to the Microteryni. The subtribe Ageniaspidiina contains three other genera, including *Holcothorax*. *Ageniaspis* can be separated from *Holcothorax* by having a six-segmented funicle (*Holcothorax* has a five-segmented funicle). (See also comments under *Holcothorax*.)

### ALAMELLA Agarwal

(Key couplets: 161, 272. Figs 87–88, 167)

*Alamella* Agarwal, 1966: 74. Type-species: *Alamella flava* Agarwal, by original designation.

DISTRIBUTION AND SPECIES. Two species, Afrotropical and Oriental; one from review area: *flava* Agarwal (1966: 77) (India, Pakistan), also one probably undescribed species from Taiwan (BPBM).

REFERENCES. Annecke (1969: 453–457), Hayat & Verma (1980), Hayat (1981b: 16–17).

BIOLOGY. Parasites of Pseudococcidae (Homoptera); erroneously recorded from Eriococcidae (Homoptera).

COMMENTS. The genus most probably belongs near *Anagyrus* (tribe Anagyrini, subtribe Anagyrina) but can easily be separated from this and related genera by the very distinct structure of the antenna (Fig. 167).

### AMENISCOCEPHALUS Girault

(Key couplet: 244)

*Ameniscocephalus* Girault, 1915a: 167. Type-species: *Ameniscocephalus meniscocephalus* Girault, by original designation.

DISTRIBUTION AND SPECIES. One species, Australian only: *meniscocephalus* Girault (1915b: 167).

BIOLOGY. Unknown, but probably parasitic on Pseudococcidae (Homoptera).

COMMENTS. Almost certainly related to *Metaphaenodiscus* (tribe Aenasiini – see comments under *Aenasius*) but can easily be distinguished on body colour and venation. *Metaphaenodiscus* is dark and metallic with a relatively short stigmal vein and distinct postmarginal vein, whilst *Ameniscocephalus* has a relatively long stigmal vein (subequal to marginal) and the postmarginal vein absent. The venation is very similar to that found in genera near *Paraphaenodiscus*.

### AMICENCYRTUS Hayat

(Key couplet: 424. Fig. 265)

*Amicencyrtus* Hayat, 1981b: 16. Type-species: *Amicencyrtus obscurus* Hayat, by original designation.

DISTRIBUTION AND SPECIES. Afrotropical, Oriental, Australasian, one described species: *obscu-*

rus Hayat (1981b: 17) (India), also undetermined material from Hong Kong, Malaysia, Brunei, Sulawesi, Philippines, Java and Australia (BMNH, BPBM).

BIOLOGY. Unknown.

COMMENTS. Closer examination of the undetermined material may show that it all belongs to *obscurus*. However, there is at least one further undescribed species from the Afrotropical region (BMNH).

The genus is close to *Cowperia* (tribe Bothriothoracini, subtribe Aminellina) from which it can be separated principally by the much flatter thoracic dorsum, particularly the scutellum (that of *Cowperia* is quite convex). Other characters for separating this genus from *Cowperia* are given by Hayat (1981b: 17).

### AMIRA Girault

(Key couplets: 423, 475)

*Amira* Girault, 1913c: 93. Type-species: *Amira fabrei* Girault, by original designation.

*Bregmencyrtus* Annecke, 1974: 369. Type-species: *Eucomys durantae* Risbec, by original designation.

DISTRIBUTION AND SPECIES. Three species, Afrotropical, Oriental, Australasian; two from review area: *fabrei* Girault; Noyes (1977: 49) (India, Australia) and *tarsata* (Ashmead; 1905b: 403) (**comb. n.** from *Howardiella*) (Philippines), also undetermined material from India, Borneo and Solomon Is. (BMNH, BMBM).

REFERENCE. Revision: Noyes (1977).

BIOLOGY. Parasites of the eggs of spiders (Araneida).

COMMENTS. The genus has been placed in a separate tribe in the Encyrtinae (Amirini) by Trjapitzin (1973b) but closer examination of material belonging to *Amira*, and its biology, indicate that it is very closely related to *Ooencyrtus* (Microteriyini, Ooencyrtina). If this suggested affinity proves to be correct then Amirini Girault, 1913 will have precedence as the valid tribal name over Microteriyini Hoffer, 1955. However, the generic relationships within the Encyrtinae are so poorly understood at present that we feel a formal synonymy of these tribal names is premature and probably unnecessary at the present time.

### ANAGYRIETTA Ferrière

(Key couplet: 157. Figs 86, 264)

*Anagyrietta* Ferrière, 1955: 121. Type-species: *Anagyrietta pantherina* Ferrière, by original designation.

DISTRIBUTION AND SPECIES. Palaearctic and Oriental, one species known, but not from review area; one undescribed species from India (BMNH).

BIOLOGY. The type-species has been reared from *Spinococcus calluneti* (Lindinger) (Homoptera, Pseudococcidae) on *Calluna vulgaris*.

COMMENTS. The Indian species differs from the type-species in having the linea calva completely closed (in *pantherina* it is interrupted anteriorly and then closed near posterior margin of wing), the areas of the forewing where the dark setae are situated not infusate as in *pantherina*, notauli completely absent, filum spinosum present (apparently absent in *pantherina*, although we have been unable to examine a slide-mounted forewing). The presence of the filum spinosum is very rare in tetracnemine encyrtids and in particular the Anagyriini. We do not believe that these differences require separate generic status for the Indian species.

### ANAGYRODES Girault

(Key couplet: 422)

*Anagyrodes* Girault, 1915a: 155. Type-species: *Anagyrodes maximus* Girault, by original designation.

**DISTRIBUTION AND SPECIES.** Oriental and Australasian, seven species: *baethi* Girault (1922b: 103) (Australia), *dei* (Girault, 1922b: 100) (**comb. n.** from *Paracladella*) (Australia), *giganteus* Girault (1915a: 156) (Australia), *maximus* Girault (1915a: 155) (Australia), *odacon* (Walker, 1838b: 476) (**comb. n.** from *Encyrtus*) (Australia), *perkinsi* (Subba Rao, 1971: 212) (**comb. n.** from *Neocladia*) (Australia) and *punctaticeps* Girault (1928b: 449) (Philippines), also undetermined material from India, Papua New Guinea and Borneo (BMNH, BPBM).

**BIOLOGY.** The unidentified Indian material has been reared from *Batrachomorphus indicus* (Lethierry) nymphs (Homoptera, Cicadellidae).

**COMMENTS.** The single extant female syntype of *Encyrtus odacon* Walker (BMNH) is here designated LECTOTYPE. This species is very close to *dei* and *perkinsi*.

This genus is related to those placed in the tribes Encyrtini, Eugahaniini, Prionomasticini, Neocladiini and Aethognathini by Trjapitzin (1973b). It is probably closest to *Eugahania* and can easily be separated from this genus in that it lacks the incision at the apex of the costal cell of the forewing. It can be separated from other related genera by the combination of the three-segmented clava, long sickle-shaped mandibular tooth, more or less absent marginal vein of forewing and hypopygium extending to the apex of the gaster or nearly so. Future study may show that these five tribes should be considered synonymous.

### ANAGYRUS Howard

(Key couplets: 150, 165, 173, 220, 230, 268, 407. Figs 95, 96, 266–268)

*Anagyrus* Howard in Howard & Ashmead, 1896: 638. Type-species: *Anagyrus greeni* Howard, by monotypy.

*Heterarthrellus* Howard, 1898b: 239. Type-species: *Heterarthrellus australiensis* Howard, by monotypy.

*Paranusia* Brèthes, 1913: 102. Type-species *Paranusia bifasciata* Brèthes, by monotypy.

*Philoponectroma* Brèthes, 1913: 104. Type-species: *Philoponectroma pectinatum* Brèthes, by original designation.

*Gyranusia* Brèthes, 1920: 137. Type-species: *Gyranusia porteri* Brèthes, by monotypy.

*Gyranusa* Mercet, 1921: 123. Type-species: *Gyranusa matritensis* Mercet, by original designation.

*Protanagyrus* Blanchard, 1940: 115. Type-species: *Protanagyrus aciculatus* Blanchard, by monotypy.

*Xiphomastix* De Santis, 1972: 45. Type-species: *Xiphomastix bellator* De Santis, by original designation.

**DISTRIBUTION AND SPECIES.** About 125 species, cosmopolitan; 58 from review area: *adamsoni* Timberlake (1941: 227) (Tahiti), *agraensis* Saraswat in Saraswat & Mukerjee (1975: 41) (India), *alami* Hayat (1970a: 112) (India), *aligarhensis* Agarwal (1965: 52) (India), *almoriensis* Shafee, Alam & Agarwal (1975: 13) (India), *amoenus* Compere (1939: 12) (India), *ananaitis* Gahan (1949: 357) (Hawaiian Is.), *antoninae* Timberlake; Beardsley (1969: 291) (Hawaiian Is.), *australensis* (Howard, 1898b: 239) (Australia), *bellus* (Girault, 1921b: 190) (**comb. n.** from *Dinocarsis*) (Australia), *citri* Agarwal (1965: 48) (India), *comperei* Subba Rao & Rai (1970: 91) (India), *cooki* (Girault, 1919b: 57) (**comb. n.** from *Dinocarsis*) (Java), *dactylopii* (Howard, 1898b: 242) (India, Hong Kong, Hawaiian Is.), *darevskii* (Trjapitzin, 1965: 310) (**comb. n.** from *Doliphoceras*) (Indonesia), *diversicornis* Mercet (1921: 134) (India), *fasciiscapus* (Girault, 1932b: 1) (**comb. n.** from *Dinocarsis*) (Australia), *ferus* (**nom. n.** for *flavus* Shafee, 1974: 325 nec Ishii, 1928) (India), *flaviceps* Timberlake (1941: 221) (Marquesas Is.), *flavidus* Shafee Alam & Agarwal (1975: 20) (India), *flavimesopleurum* (Girault, 1917g: 137) (**comb. n.** from *Dinocarsis*) (Australia), *foersteri* (Girault, 1915a: 145) (**comb. n.** from *Epidinocarsis*) (Australia), *fusciventris* (Girault, 1915a: 144) (Australia), *greeni* Howard in Howard & Ashmead (1896: 639) (Sri Lanka), *hipocoon* Trjapitzin (1965: 317) (Indonesia), *indicus* (Subba Rao, 1967: 1) (India), *inopus* (**nom. n.** for *indicus* Shafee, Alam & Agarwal, 1975: 13) (India, Mariana Is.), *kivuensis* Compere (1939: 11) (India), *laeviceps* Perkins (1910: 654) (Hawaiian Is.), *lilacini* Ferrière (1937: 317) (Philippines), *lineatipes* (Girault, 1919b: 57) (**comb. n.** from *Dinocarsis*) (Java), *longipennis* Shafee, Alam & Agarwal (1975: 16) (India), *longiventris* Hayat (1979a: 173) (India), *major* Perkins; Beardsley (1969: 289) (Hawaiian Is.), *mirus* (Girault, 1915a: 143) (**comb. n.** from *Epidinocarsis*) (Australia), *mumfordi* Timberlake (1941: 222) (Marquesas Is.), *nigricornis*

Timberlake (1919b: 197) (Hawaiian Is.), *nigricarpus* Shafee, Alam & Agarwal (1975: 11) (India), *nigriflagellum* (Girault, 1915a: 145) (**comb. n.** from *Epidinocarsis*) (Australia), *nigroradiculatus* Subba Rao & Rai (1970: 94) (India), *orbitalis* Timberlake (1941: 220) (Marquesas Is.), *pseudococci* (Girault, 1915a: 185) (Pakistan, India), *punctulatus* Agarwal (1965: 50) (India), *qadrii* (Hayat, Alam & Agarwal, 1975: 12) (**comb. n.** from *Leptanusia*) (India), *saccharicola* Timberlake (1932: 159) (India, Taiwan, Thailand, Malaysia, Philippines, Fiji, Hawaiian Is.), *saipanensis* Doutt (1952: 399) (Mariana Is.), *sawadai* Ishii (1928: 88) (India, Taiwan), *scutomaculatus* Agarwal (1965: 49) (India), *shahidi* Hayat (1979a: 177) (India), *similis* (Girault, 1915a: 145) (**comb. n.** from *Epidinocarsis*) (Australia), *spica* (Girault, 1921b: 191) (**comb. n.** from *Dinocarsis*) (Australia), *subalbipes* Ishii (1928: 90) (S. China), *subflaviceps* (Girault, 1915a: 143) (**comb. n.** from *Epidinocarsis*) (Australia), *subproximus* (Silvestri, 1915b: 346) (Pakistan), *swezeyi* Timberlake (1919b: 199) (Hawaiian Is., India), *tibimaculatus* Agarwal (1965: 50) (India), *varithorax* (Girault, 1923d: 2) (**comb. n.** from *Leptomastix*) (Australia), *xanthogaster* Perkins (1910: 653) (Hawaiian Is.), also much unidentified material from throughout the region (BMNH, BPBM, CNC, UCR, HC).

REFERENCES. Beardsley (1969), Shafee *et al.* (1975: 9–21), Hayat (1979a).

BIOLOGY. Parasites of Pseudococcidae (Homoptera) and Coccinellidae (Coleoptera) from Australia whose larvae produce a waxy secretion, e.g. *Telsimia* sp.

COMMENTS. We have examined a specimen determined as *Mashhoodia flava* by Shafee and believe that it belongs in *Anagyrus*. We have not examined material of *Doliphoceras darevskii*, but from the description it would seem to be better placed in *Anagyrus*.

*Anagyrus* has been placed in the tribe Anagyrini, subtribe Anagyrina by Trjapitzin (1973a). During our study of the species belonging to genera of this subtribe we have had some measure of difficulty assigning many of the species to genera as they are understood at the present time. Kerrich (1982) has summarised the characters previously used by workers to separate the genera but we have found that the single characters or combinations of characters used by him are largely unreliable, probably because his study was based on only a relatively small number of species belonging to this group. In particular, we have had difficulty in separating *Anagyrus* from *Doliphoceras* and *Gyransoidea*, and *Epidinocarsis* from *Doliphoceras*, largely because many of the species have unusual combinations of characters, e.g. a species which could be placed in *Doliphoceras* with sculpture typical of *Anagyrus* or a species which could be placed in *Anagyrus* with an elongate postmarginal vein as in *Gyransoidea*. Our study has not been sufficiently detailed to allow us to reach any satisfactory conclusions with regard to the possible natural grouping of species of this subtribe. We do believe however, that many of the genera included in this group are not necessary and it is very probable that many will be considered synonymous when a more detailed study, on a world-wide basis, is undertaken. Any new genera or generic synonymy proposed at this point could prove to be premature and almost certainly would lead to a good deal of confusion and resentment amongst biological control workers. Therefore we have found it necessary to use simple, convenient characters for separating these genera in the key and, although we do not think that these characters alone will reflect the natural grouping of species, it does allow most of the well-known described species to run in the key to genera where they are placed by most workers at present. *Anagyrus* is here separated from *Doliphoceras* almost solely on sculpture since we find scape coloration, shape of flagellar segments and body shape all totally unreliable. *Gyransoidea* is separated from *Anagyrus* by the postmarginal vein of the forewing being at least one-quarter longer than the stigmal, whereas in *Anagyrus* it is not or hardly longer. We have not found that sculpture or shape of the scape is totally reliable. Unfortunately this has led to one relatively well-known species being transferred from *Anagyrus* to *Gyransoidea*, i.e. *mirzai* Agarwal. *Anagyrus* and *Epidinocarsis* are separated entirely on the sculpture of the head and dorsum of thorax as no other characters were found to be reliable. Other genera belonging to this group were separated on characters given in the key.

**ANANUSIA** Girault

(Key couplets: 370, 402, 499)

*Paranusia* Girault, 1913e: 97. Type-species: *Paranusia longiscapus* Girault, by original designation. [Homonym of *Paranusia* Brèthes, 1913.]

*Ananusia* Girault, 1917g: 155. [Replacement name for *Paranusia* Girault.]

*Myrmencyrtus* Gordh & Trjapitzin, 1979b: 107. Type-species: *Myrmencyrtus australis* Gordh & Trjapitzin, by original designation. **Syn. n.**

**DISTRIBUTION AND SPECIES.** Two species, both Australian: *australis* (Gordh & Trjapitzin, 1979b: 107) (**comb. n.** from *Myrmencyrtus*) and *longiscapus* (Girault, 1913e: 98).

**BIOLOGY.** Associated with nests of ants (Hymenoptera, Formicidae) and probably parasitic on mealybugs within the nests (Homoptera, Pseudococcidae).

**COMMENTS.** We have not seen material of *Myrmencyrtus australis*, but it is clear from the description that it is congeneric with, if not conspecific with, *Ananusia longiscapus*.

The genus is very close to *Taftia* (Chrysoplatygerini) and can easily be separated from it by the extremely deep sutures between the scutellum and the axillae and by the strongly flattened flagellum (in *Taftia* it is more or less cylindrical). A key to separate the genera of the Chrysoplatygerini is given by Gordh & Trjapitzin (1979b).

**ANARHOPUS** Timberlake

(Key couplet: 55)

*Anarhopus* Timberlake, 1929: 15. Type-species: *Anarhopus sydneyensis* Timberlake, by original designation.

**DISTRIBUTION AND SPECIES.** One species, Australasia and New World: *sydneyensis* Timberlake (1929: 18) (= *Arhopoideus semiargenteus* Girault, 1929b: 314 **syn. n.**) (Australia, New Zealand, Hawaiian Is.).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** We have not examined the holotype of *A. semiargenteus* (SAM), but since Girault himself, in an unpublished manuscript, synonymised this species with *Anarhopus sydneyensis*, and the description agrees with *sydneyensis*, we have no hesitation in synonymising the two species.

Placed in the tribe Tetracnemini, subtribe Arhopoideina which also includes *Tetracnemoidea* and *Zealandencyrtus* from which it can be separated using the characters given in the key. *Tetracnemoidea* and *Anarhopus* are extremely close and some of the species of *Tetracnemoidea* found in New Zealand appear to be more or less intermediate. A more detailed reevaluation of characters, taking these species into consideration, may eventually show that the two genera should be considered synonymous.

**ANICETUS** Howard

(Key couplet: 113. Fig. 52)

*Anicetus* Howard in Howard & Ashmead, 1896: 639. Type-species: *Anicetus ceylonensis* Howard, by monotypy.

*Asteropaeus* Howard, 1898b: 231. Type-species: *Asteropaeus primus* Howard, by monotypy.

*Habrolepopterygis* Girault, 1915a: 86. Type-species: *Habrolepopterygis felix* Girault, by original designation.

*Krishnieriella* Mani, 1935: 421. Type-species: *Krishnieriella ceroplastodis* Mani, by original designation.

**DISTRIBUTION AND SPECIES.** Twenty-seven species, cosmopolitan except for more northerly latitudes (40°+); 16 species from review area: *aligarhensis* Hayat, Alam & Agarwal (1975: 34) (India), *angustus* Hayat, Alam & Agarwal (1975: 35) (India), *annulatus* Timberlake; Annecke

(1967: 110) (China, Australia, Hawaiian Is.), *ashmeadi* Hayat, Alam & Agarwal (1975: 33) (India), *beneficus* Ishii & Yasumatsu; Tachikawa (1963: 126) (India), *ceylonensis* Howard; Annecke (1967: 108) (India, Sri Lanka), *chinensis* Girault; Annecke (1967: 128), (China), *communis* Annecke (1967: 121) (Australia), *deltoideus* Annecke (1967: 118) (India, China, Borneo), *dodonia* Ferrière; Annecke (1967: 120) (Pakistan, India), *felix* Girault (1915a: 86), (Australia), *howardi* Hayat, Alam & Agarwal (1975: 36) (India), *integrellus* Trjapitzin; Annecke (1967: 129) (Pakistan, India), *mirabilis* (Girault; Annecke, 1971b: 258) (Australia), *stylatus* Subba Rao (1977: 16) (India) and *yasumatsui* Subba Rao (1965: 73) (India), also further undetermined material from throughout the region (BMNH, BPBM, HC).

REFERENCES. Revision: Annecke (1967: 105–130); also Hayat *et al.* (1975: 30–38).

BIOLOGY. Parasites of Coccidae (Homoptera).

COMMENTS. Placed in the tribe Cerapterocerini; *Anicetus* and other genera of this tribe can be separated using the present key and the more detailed one provided by Annecke (1967: 100–101).

### **ANOMALENCYRTUS** Hayat & Verma

(Key couplet: 274. Fig. 169)

*Anomalencyrtus* Hayat & Verma, 1980: 341. Type-species: *Anomalencyrtus longicornis* Hayat & Verma, by original designation.

DISTRIBUTION AND SPECIES. Afrotropical, Oriental, one described species only: *longicornis* Hayat & Verma (1980: 344) (India).

BIOLOGY. Unknown.

COMMENTS. Material from the Afrotropical region (Zimbabwe – BMNH) almost certainly belongs to the type-species, but differs in having the metanotum, propodeum and mesopleurum extensively dark brown, whereas in the Indian specimens these parts are yellowish.

The genus can best be placed in the tribe Anagyrini, subtribe Anagyrina and differs from all other genera of the subtribe by the peculiar structure of the antenna, notably the long, unsegmented clava.

### **ANOMALICORNIA** Mercet

(Key couplets: 78, 272. Figs 37, 162)

*Anomalicornia* Mercet, 1921: 85. Type-species: *Anomalicornia tenuicornis* Mercet, by original designation.

DISTRIBUTION AND SPECIES. Palaearctic. Afrotropical, only one species recognised: *tenuicornis* Mercet (1921: 85; also 1922b: 294 as *ruschkai*) (India), also undetermined material from Java and Australia (BMNH, CNC).

BIOLOGY. A parasite of Pseudococcidae (Homoptera).

COMMENTS. More than one species is known to us since material from Cameroun (BMNH) represents an undescribed species. We are not certain that all of the material from India or Australia is actually *tenuicornis* because there are some differences in the relative lengths of the funicle segments.

Trjapitzin (1973a) places this genus in a separate tribe, the Anomalicorniini, but we believe that it could be accommodated in the Anagyrini, possibly as a separate subtribe. The unique structure of the antenna and forewing venation (in fully winged forms) should serve to distinguish this genus from others included in the Anagyrini.

**ANTHEMUS** Howard

(Key couplet: 45. Figs 12–14)

*Anthemus* Howard in Howard & Ashmead, 1896: 643. Type-species: *Anthemus chionaspidis* Howard, by monotypy.

*Hexalis* Bakkendorf, 1939: 84. Type-species: *Hexalis funicularis* Bakkendorf, by monotypy.

DISTRIBUTION AND SPECIES. Ten species, Old World; four from review area: *chionaspidis* Howard in Howard & Ashmead (1896: 643) (Sri Lanka), *inconspicuus* Doutt (1966: 226) (Pakistan), *hilli* Dodd (1917: 352, as var. of *chionaspidis*) (Australia) and *maculatus* Subba Rao (1976: 685) (Pakistan).

REFERENCE. Key to world species: Subba Rao (1976: 685).

BIOLOGY. Parasites of Diaspididae (Homoptera).

COMMENTS. The types of *Anthemus emersoni* Girault (1920b: 98) and *A. nigriceps* Girault (1934a: 2) have been examined (QM). Both belong to the family Mymaridae: *A. emersoni* to a genus very probably near to *Parallelaptera* Enock, and *A. nigriceps* may be a species of *Arescon* Walker.

The genus is the sole representative of the tribe Anthemini (Encyrtinae).

**APHYCOMORPHA** Timberlake

(Key couplets: 410, 414. Figs 269–271)

*Aphycomorpha* Timberlake, 1919b: 225. Type-species: *Aphycomorpha araucariae* Timberlake, by original designation.

DISTRIBUTION AND SPECIES. Two species, Neotropics, Pacific and New Zealand: *araucariae* Timberlake (1919b: 227) (Hawaiian Is.) and *aspidioti* Tachikawa & Valentine (1969a: 535) (New Zealand and offshore islands).

BIOLOGY. Parasites of Diaspididae and Eriococcidae (Homoptera).

COMMENTS. *Aphycomorpha aspidioti* (key couplet 414) may be incorrectly placed in this genus and may be closer to *Aphycopsis* since the mesopleurum is not as strongly enlarged as in *araucariae* (see below). It differs from *Aphycopsis australiensis* in biology and in lacking notaular lines on the mesoscutum; however, the latter are very obscure in *australiensis* and this species would run to *Aphycomorpha* (couplet 414) in the key if the notaular lines are overlooked.

The genus has been placed in the tribe Aphycini by Trjapitzin (1973b) but we believe that almost certainly it would be better placed in the Microteriyini. This is indicated by the shape of the mandible (two teeth and a broad truncation) and the enlarged mesopleurum (as in *Ooencyrtus* and *Trichomasthus*, although in *aspidioti* it is not so strongly enlarged) which appears to be typical of most genera which belong in the Microteriyini. It is probably closest to *Aphycopsis* (see comments under *Aphycopsis*) and can be separated from most other genera of the tribe by its resemblance to some species of *Metaphycus* and *Aphycus*.

**APHYCOPSIS** Timberlake

(Key couplet: 377)

*Aphycopsis* Timberlake, 1916: 585. Type-species: *Aphycus australiensis* Howard, by original designation.

DISTRIBUTION AND SPECIES. One species, Australia only: *australiensis* (Howard; Timberlake, 1916: 586).

BIOLOGY. Parasites of Pseudococcidae (Homoptera).

COMMENTS. We have examined the two female syntypes of *Aphycus australiensis* Howard

(USNM). One has the head still attached to the body but partially eaten away at the vertex and an antenna and forewing mounted on a slide. The other has the head removed and mounted separately on a slide. The head has been dissected and crushed in typical Girault fashion but is otherwise complete. The latter specimen is here designated as LECTOTYPE and has been so labelled.

*Mesanusia speciosa* Girault (p. 353) may also belong to this genus.

The genus bears a superficial resemblance to species of *Metaphycus* but differs in the mandible having a single small tooth and a broad truncation (as in Fig. 189) whereas all species of *Metaphycus* have tridentate mandibles. The structure of the mandible and general habitus suggest that the genus is related to *Aphycomorpha* and *Mozartella* which very probably belong in the Microterytini. It differs from *Aphycomorpha* in having the hind coxa narrowly in contact with the propodeum in side view (see comments under *Aphycomorpha*), forewing with a punctiform marginal vein, and notaular lines present (although very obscure) in the anterior part of the mesoscutum. In *Aphycomorpha* the marginal vein is at least about twice as long as broad and the notaular lines are absent. It differs from *Mozartella* in having a six-segmented funicle and notaular lines present (*Mozartella* has a five-segmented funicle and notaular lines absent).

### APHYCUS Mayr

(Key couplets: 362, 364, 388. Figs 199, 272–273)

*Aphycus* Mayr, 1876: 695. Type-species: *Encyrtus apicalis* Dalman, by designation of Ashmead (1900b: 383).

*Aphycoideus* Williams, 1916: 153. Type-species: *Aphycoideus io* Williams, by monotypy.

*Waterstonia* Mercet, 1917c: 268. Type-species: *Waterstonia prima* Mercet, by original designation.

*Euaphycus* Mercet, 1921: 197. Type-species: *Encyrtus hederaceus* Westwood, by original designation. (As subgenus of *Aphycus*.)

*Aphycaspis* Hoffer, 1954: 170. Type-species: *Aphycus snoflaki* Hoffer, by original designation. (As subgenus of *Aphycus*.)

**DISTRIBUTION AND SPECIES.** Twenty-seven species, cosmopolitan except Neotropics; four from review area: *coccidiphagus* Girault (1917g: 134) (Australia), *nassau*i Girault (1932a: 4) (Australia), *parisoti* Girault (1936: 1) (Australia) and *rubescens* (Compere & Annecke, 1961: 41) (Taiwan), also several undetermined species from Pakistan, India and Australia (BMNH, BPBM).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** One of the Indian species placed here has complete notaular lines and appears to be very close to *snoflaki* Hoffer which is the type-species of subgenus *Aphycaspis*. We have considered the possibility that *Aphycaspis* should be raised to generic status because of the complete notaular lines, but believe that it would be best to defer this until a more detailed study of related genera can be undertaken e.g. *Cirrhenyrtus* Timberlake and *Echthroplexiella* Mercet.

*Aphycus* is placed in the tribe Aphycini by Trjapitzin (1973b) and almost certainly the tribe should also include *Echthroplexiella* (type-genus of subtribe Echthroplexiellina). (Trjapitzin (1973b) places the subtribe Echthroplexiellina in the tribe Miraini which must be incorrect since *Mira* (type-genus of the Miraini) belongs in the Tetracneminae near the tribe Charitopidini (see also comments under *Mira*.) It is very probable that further study will show that *Echthroplexiella* and *Aphycus* are very close and may even be synonymous since most of the characters used to separate these two genera are unreliable. We also believe that the status of the tribe Homalotylini should be reconsidered because it is very close to the Aphycini and often difficult to separate, even at a subtribal level. The presence or absence of notaular lines is not reliable since many species of *Aphycus*, e.g. *hederaceus* (Westwood), have notaular lines present in the extreme anterior part of the mesoscutum. These are visible on examination of well-cleared specimens using a phase contrast microscope.

**APOLEPTOMASTIX** Kerrich

(Key couplet: 270. Fig. 166)

*Apoleptomastix* Kerrich, 1982: 416. Type-species: *Apoleptomastix spoliata* Kerrich, by original designation.

**DISTRIBUTION AND SPECIES.** Six species, Oriental, Afrotropical and Australasian; five from review area: *bicoloricornis* (Girault; Kerrich, 1982: 427) (Australia), *poonensis* (Mani & Kaul; Kerrich, 1982: 420) (India), *rufipleurus* Kerrich (1982: 421) (India), *rufiscapus* Kerrich (1982: 422) (India) and *spoliata* Kerrich (1982: 424) (Pakistan, India), also at least two further species from India, Bangladesh, Cambodia, Laos, Thailand, Vietnam, China and Hong Kong (BMNH, BPBM, GC).

**BIOLOGY.** Parasites of Pseudoccoidae (Homoptera).

**COMMENTS.** *A. bicoloricornis* and *spoliata* are extremely close and may be synonymous.

The genus can be placed in the tribe Anagyrini, subtribe Anagyrina (Tetracneminae) and can be separated from related genera by the characters given in the key and also by using the characters listed by Kerrich (1982).

**ARRHENOPHAGOIDEA** Girault

(Key couplet: 48. Figs 15, 16)

*Arrhenophagoidea* Girault, 1915a: 73. Type-species: *Arrhenophagoidea coloripes* Girault, by original designation.

**DISTRIBUTION AND SPECIES.** Four species, Neotropical, Afrotropical and Australasian; one from review area: *coloripes* Girault; Annecke & Prinsloo (1974: 41) (Australia, New Zealand).

**REFERENCE.** Revision: Annecke & Prinsloo (1974).

**BIOLOGY.** Parasites of Diaspididae (Homoptera).

**COMMENTS.** Placed in the tribe Psyllechthriini (Encyrtinae).

**ARRHENOPHAGUS** Aurivillius

(Key couplet: 45. Figs 9–11)

*Arrhenophagus* Aurivillius, 1888: 144. Type-species: *Arrhenophagus chionaspidis* Aurivillius, by monotypy.

*Mymariella* Risbec, 1951: 402. Type-species: *Mymariella parlatoria* Risbec, by monotypy.

**DISTRIBUTION AND SPECIES.** Two species, New World, Palaearctic, Afrotropical, Oriental and Pacific; both from review area: *albitibiae* Girault; Annecke & Prinsloo (1974: 38) (Sri Lanka, Hong Kong, China, Hawaiian Is.) and *chionaspidis* Aurivillius; Annecke & Prinsloo (1974: 36) (India, Sri Lanka, New Zealand), also one undetermined species from Samoa (BMNH).

**REFERENCE.** Revision: Annecke & Prinsloo (1974).

**BIOLOGY.** Parasites of Diaspididae (Homoptera).

**COMMENTS.** The only included genus in the tribe Arrhenophagini (Encyrtinae).

**ASEIRBA** Cameron

(Key couplet: 293)

*Aseirba* Cameron, 1884: 127. Type-species: *Aseirba caudata* Cameron, by monotypy.

**DISTRIBUTION AND SPECIES.** One, Neotropical; one undescribed species from Sarawak (BPBM).

BIOLOGY. Unknown.

REFERENCE. Noyes (1980: 179).

COMMENTS. The species from Sarawak differs from *caudata* in having tridentate mandibles, although on one side the third, inner tooth is rather obscure. Having taken into consideration other characters and the size and shape of the mandible we do not consider that this difference is generic. *Aseirba* is very close to *Austroencyrtus* and more or less differs only in having the hypopygium reaching the apex of the gaster, the marginal vein of the forewing relatively shorter, not or hardly longer than broad, whereas in *Austroencyrtus* the hypopygium does not reach more than two-thirds along the gaster and the marginal vein is clearly several times longer than broad. The undescribed Neotropical species previously placed in *Aseirba* (Noyes, 1980: 179) can be better placed in *Austroencyrtus*.

Placement of the genus according to Trjapitzin's (1973b) classification is difficult but it may be related to the Bothriothoracini, possibly in an as yet undefined group of genera which would also include *Austroencyrtus* and *Hemileucocerus*. It can be separated from these genera by the characters given in the key.

### **ASITUS** Erdős

(Key couplet: 206. Figs 124, 274–275)

*Asitus* Erdős, 1955: 47. Type-species: *Asitus ciliatus* Erdős, by original designation.

*Ferriereus* Ghesquière, 1956: 698. Type-species: *Xanthoencyrtus phragmitis* Ferrière, by original designation.

DISTRIBUTION AND SPECIES. One, Palaearctic and Oriental: *phragmitis* (Ferrière, 1955: 13) (Pakistan).

BIOLOGY. Parasitic on mealybugs associated with *Phragmites* (Homoptera, Pseudococcidae).

COMMENTS. The genus belongs to the subtribe Rhopina (tribe Anagyrini, Tetracneminae) and can be separated from other related genera of the subtribe by having an extremely dorso-ventrally flattened body and a solid clava.

### **ASTYMACHUS** Howard

(Key couplet: 402. Figs 208, 209, 276)

*Astymachus* Howard, 1898b: 238. Type-species: *Astymachus japonicus* Howard, by monotypy.

DISTRIBUTION AND SPECIES. Two, Palaearctic, Oriental; one from review area: *japonicus* Howard; Tachikawa (1963: 160) (India, Pakistan, Malaysia).

BIOLOGY. Reared from Aclerdidae (Homoptera) on sugarcane. Also reported from Pseudococcidae (Homoptera) on sugarcane which is possibly erroneous.

COMMENTS. Placed in the tribe Astymachini by Trjapitzin (1973b) as the sole included genus. It is quite possibly related to genera in the tribe Aphycini.

### **AUSTRALANUSIA** Girault

(Key couplets: 185, 510)

*Australanusia* Girault, 1922a: 47. Type-species: *Australanusia pilosithorax* Girault, by monotypy.

DISTRIBUTION AND SPECIES. Two species, both Australian: *pilosithorax* Girault (1922a: 47) and *tarsalis* Girault (1923d: 2).

BIOLOGY. Unknown.

COMMENTS. The two included species are extremely close and may be synonymous; they appear to differ only in the characters given by Girault (1923*d*: 2).

The genus probably belongs to the tribe Microterytini and should be distinguishable from other genera placed here by Trjapitzin by the combination of the solid clava, transverse funicle segments, very conspicuous hairs on the eyes and dorsum of thorax, and the setae in basal cell of forewing being about as dense of those in centre of wing.

### **AUSTRALAPHYCUS** Girault

(Key couplet: 285)

*Australaphycus* Girault, 1923*c*: 143. Type-species: *Australaphycus albioviductus* Girault, by monotypy.

DISTRIBUTION AND SPECIES. Australia, one species: *albiovductus* Girault (1923*c*: 143).

BIOLOGY. Unknown.

COMMENTS. Girault, in his description, states 'ovipositor free', which we take to mean that the hypopygium does not extend to near the apex of the gaster. Examination of the holotype (QM) of *albiovductus* shows that the hypopygium appears to reach at least to the apex of the gaster, or perhaps very slightly beyond. However, since the specimen is badly mounted on a microscope slide that may be misleading. The genus appears to be close to *Aenasioidea* (tribe Aphycini, subtribe Paraphycina) and may prove to be synonymous when fresh material is collected.

### **AUSTRALIA** Girault

(Key couplet: 298. Fig. 179)

*Australia* Girault, 1928*a*: 3. Type-species: *Australia minuta* Girault, by monotypy.

DISTRIBUTION AND SPECIES. One species, Australia only: *minuta* Girault (1928*a*: 3).

BIOLOGY. Unknown.

COMMENTS. This genus possibly also includes *Parachalcerinys coccidoxenoides* Girault from which it can be separated by the relative lengths of the antennal segments.

*Australia* almost certainly belongs in the tribe Aphycini (Encyrtinae) and can be separated from other genera placed here by the metallic green body, wing venation and conformation of the antennae. Most other genera of the tribe have non-metallic bodies.

### **AUSTROCHOREIA** Girault

(Key couplets: 80, 88)

*Chinchilla* Girault, 1928*a*: 1. Type-species: *Chinchilla keatsi* Girault, by monotypy. [Homonym of *Chinchilla* Bennett, 1829.] **Syn. n.**

*Austrochoreia* Girault, 1929*a*: 3. Type-species: *Austrochoreia latiscutum* Girault, by monotypy.

*Chinchillisca* Ghesquière, 1946: 369. [Replacement name for *Chinchilla* Girault.] **Syn. n.**

DISTRIBUTION AND SPECIES. Two described species, both Australian: *keatsi* (Girault, 1928*a*: 1) (**comb. n.** from *Chinchilla*) and *latiscutum* Girault (1929*a*: 3), also several other species from Australia and New Zealand (BMNH, DSIR).

BIOLOGY. Unknown.

COMMENTS. Taken in isolation, the two described species appear to exhibit enough morphological differences to warrant retaining the genera they were described in as distinct. *Austrochoreia latiscutum* has a very transverse scutellum without a distinct flange apically or laterally and the mesoscutum is slightly exposed posteriorly, whilst *keatsi* has a much longer, more rounded scutellum with a clear flange apically and laterally under which the wing partly fits and the mesoscutum is completely hidden by the pronotum. Other differences, e.g. body size, colour

and relative proportions of the antennal segments, could largely be taken as specific. However, a study of the other material available has shown that the differences in the scutellum and pronotum length are inconsistent and therefore we propose that the two genera be synonymised.

The genus is best placed in the tribe discodini (Encyrtinae) and can be distinguished from other included genera by the elongate pronotum, which largely covers the mesoscutum, the lack of notaular lines and the abbreviated wings.

### **AUSTROENCYRTOIDEA** Girault

(Key couplet: 451)

*Austroencyrtoidea* Girault, 1922d: 206. Type-species: *Austroencyrtoidea leichhardti* Girault, by monotypy.

DISTRIBUTION AND SPECIES. One species, Australia only: *leichhardti* Girault (1922d: 206).

BIOLOGY. Unknown.

COMMENTS. The genus may belong to the subtribe Syrphophagina (tribe Microteryni, Encyrtinae) and can be separated from other genera placed there by the combination of the solid clava, elongate postmarginal vein of the forewing and strongly tridentate mandibles. All other genera included in this subtribe have a two- or three-segmented clava, although some occasionally have an elongate postmarginal vein and tridentate mandibles.

### **AUSTROENCYRTUS** Girault

(Key couplet: 293. Fig. 278)

*Austroencyrtus* Girault, 1923c: 141. Type-species: *Austroencyrtus annulicornis* Girault, by monotypy.

DISTRIBUTION AND SPECIES. Neotropics and Australasia; two species from review area: *annulicornis* Girault (1923c: 141) (Australia) and *guamensis* (Fullaway, 1946: 208) (**comb. n.** from *Cerchysius*) (Mariana Is.), also at least three further undescribed species from Papua New Guinea and New Hebrides (BMNH, BPBM).

BIOLOGY. Associated with Cerambycidae and other beetles (Coleoptera) in rotting logs.

COMMENTS. The genus is near *Aseirba* and *Hemileucocerus* (see comments under *Aseirba*). The holotype of *Cerchysius guamensis* has been examined (USNM) and belongs to the present genus.

### **AUSTROMIRA** Girault

(Key couplet: 261)

*Austromira* Girault, 1924b: 3. Type-species: *Austromira muironi* Girault, by monotypy.

DISTRIBUTION AND SPECIES. Australia only, one species: *muironi* Girault (1924b: 3) and possibly one other from Australia (BMNH).

BIOLOGY. Unknown.

COMMENTS. Almost certainly related to *Cheiloneurus* (Encyrtinae, tribe Cheiloneurini) and distinguished from other related genera by the lack of an apical tuft of setae on the scutellum, more or less evenly infusate forewings (except apex which is hyaline), pattern of setae on the forewing (a central area just distal to linea calva where the setae are distinctly more sparse than proximal or distal to it, setae in basal cell more or less extending to base of forewing) and coloration and structure of antennae (apical funicle segments and clava white, contrasting with basal segments, and flagellum cylindrical, not conspicuously broadening apically).

**AVETIANELLA** Trjapitzin

(Key couplet: 182. Figs 105, 106, 277)

*Avetianella* Trjapitzin, 1968: 97. Type-species: *Avetianella capnodiobia* Trjapitzin, by original designation.**DISTRIBUTION AND SPECIES.** Two described species, Holarctic, also Neotropics and Oriental; one undescribed species from India (BMNH).**BIOLOGY.** Parasites of eggs of Cerambycidae and Scolytidae (Coleoptera).**COMMENTS.** Placed in the tribe Microteryni, subtribe Oobiina (Encyrtinae). Trjapitzin (1977) provides a key to the genera of this subtribe.**BACALUSA** gen. n.

(Key couplets: 240, 277. Figs 165, 173, 174, 279–288)

Type-species: *Bacalusa fuscipennis* sp. n. Gender: feminine.

♀. **Head.** In facial view about as broad as long, or clearly broader than long, in profile about one-half longer than wide and anteriorly more or less gradually and evenly curved. Eye with posterior margin straight, about one-half longer than broad, with a few short inconspicuous setae and reaching occipital margin which is sharp. Malar space a little less than half as long as eye, with malar sulcus present. Frontoververtex slightly less than half width of head; ocelli forming a right angle, posterior ocellus separated from occipital margin by less than to about its own diameter, and from eye margin by its own diameter or a little more. Antennal scrobes moderately deep, but not strongly margined, more or less meeting dorsally and reaching a little more than half way to anterior ocellus from toruli; antennal torulus separated from mouth margin by about its own length and from other torulus by a little less than one and a half times its own length, its dorsal margin slightly below the ventral level of the eyes. Antennal scape more or less cylindrical, about as long as maximum width of frontoververtex, about six times as long as broad, pedicel conical and distinctly longer than any of the funicle segments which are all clearly longer than broad, cylindrical and slightly broadening distally, funicle six-segmented, clava three-segmented, about half to two-thirds as long as, and slightly wider than, the funicle, with apex more or less rounded and sutures parallel; longitudinal sensillae on all but the first two or three flagellar segments. Frontoververtex with very fine, raised, rugose to rugose-reticulate sculpture which may give it a silky appearance, more irregular and elongate on cheeks and more squamiform-reticulate on inter-antennal prominence, numerous short translucent or white recumbent setae on frontoververtex. Mandible narrow with two acute apical teeth, maxillary palpus three-segmented, labial palpus two-segmented.

**Thorax.** In side view moderately deep and dorsally quite flat with metapleurum and propodeum broadly in contact with hind coxa. Pronotum in dorsal view with hind margin gradually curved and moderately concave; visible part of mesoscutum about twice as broad as long, with notaular lines absent or present in anterior half; axillae meeting; scutellum a little broader than long, slightly longer than visible part of mesoscutum, with apex rounded; propodeum short medially, not more than about one-seventh length of scutellum. Mesoscutum with fine, raised, squamiform-reticulate sculpture, scutellum with similar but rather more longitudinally elongate sculpture, both mesoscutum and scutellum often having an almost silky appearance, propodeum with or without shallow, raised sculpture medially, mesopleurum with shallow raised reticulate sculpture; dorsum of thorax with numerous short, appressed, translucent setae. Forewing hyaline or with a distinct fuscous pattern, wing from about two and one half to a little less than three times as long as broad, linea calva interrupted or closed by about three lines of setae, filum spinosum absent, submarginal vein with an apical hyaline break, marginal vein about twice as long as broad, about as long as or longer than postmarginal and slightly shorter than stigmal, costal cell relatively narrow, over 18 times as long as broad and with a single line of setae dorsally in distal half. Hindwing hyaline, about five to six and one-half times as long as broad with marginal fringe about two-thirds maximum wing width. Mid tibial spur a little shorter than basal mid tarsal segment.

**Gaster.** About as long as thorax, cercal plates in anterior half, paratergites present, last tergite from only a little longer than half length of to as long as mid tibia, hypopygium reaching apex of gaster, ovipositor very slightly exerted and about two-thirds length of mid tibia, gonostyli fused to second valvifers and about one-sixth length of ovipositor.

♂. Differs from female as follows.

**Head.** Malar space at least about two-thirds length of eye; frontoververtex clearly broader than half head

width, posterior ocellus separated from occipital margin by less than its own diameter and from eye margin by a little less than twice its diameter; antennal scrobes absent; antennal torulus separated from mouth margin by about twice its own length and from other torulus by about its own length, its ventral margin slightly below to well above the ventral margins of the eyes; antennal scape about as long as to distinctly shorter than width of frontovertex, pedicel short, a little longer than broad and about half as long as any of the funicle segments which are at least about twice as long as broad; longest setae on funicle about four times as long as maximum width of segments, longitudinal sensillae on all flagellar segments but the first one or two, scale-like sensillae in distal half of sixth funicle segment or proximal half of clava. Sculpture of head similar to that of female but less silky in appearance.

*Thorax.* Similar to that of female, except if infuscation of forewing present then less strong than in corresponding females and sculpture of dorsum of thorax less fine and lacking silky appearance.

*Gaster.* Similar to female except cercal plates of distal half of gaster and genitalia: digiti about one-quarter to one-eighth length of aedeagus which in turn is a little less than half as long as mid tibia or about twice as long as mid tibial spur.

COMMENTS. The genus belongs to the tribe Anagyrini, subtribe Anagyrina (Tetracneminae). It can be distinguished from other members of the subtribe by the conformation of the antenna, the occasional presence of notaular lines on the mesoscutum and infuscation of the forewing.

### *Bacalusa fuscipennis* sp. n.

(Figs 165, 174, 279–288)

♀. Length: approx. 0.78–0.81 mm (holotype, 0.81 mm).

*Colour.* Head orange, antenna yellow with basal half of scape and apex of clava slightly dusky, thorax and gaster dark orange, distinctly dusky in centre and anterior margin of mesoscutum, apex of tegula, along midline of scutellum, sides of propodeum immediately above hind coxa and on gaster immediately distad of cercal plates, legs yellow; infuscation of forewing as in Fig. 279.

*Head.* Frontovertex above scrobes with very fine, raised, transversely rugose-reticulate sculpture of moderately silky appearance (Fig. 280), lower parts of face and interantennal prominence with more squamiform-reticulate sculpture; posterior ocellus separated from occipital margin by a little more than half its own length and from eye margin by about one and one-half times its own length. Relative measurements (holotype): head width (facial view) 55, head length 55, minimum frontovertex width 26, malar space 17, eye length 34, eye width 23, POL 8, OOL 6, scape length 30, other proportions of antenna as in Fig. 174.

*Thorax.* Notaular lines present and reaching slightly more than half way across mesoscutum; mesoscutum with fine, raised, squamiform-reticulate sculpture (Fig. 281), that on scutellum similar but laterally more longitudinally elongate (Fig. 282), both mesoscutum and scutellum distinctly less silky in appearance than frontovertex and with only a few appressed, translucent setae. Relative measurements of forewing (holotype): length 129, width 42, other proportions as in Figs 165, 279; of hindwing: length 100, width 15.

*Gaster.* Relative lengths (paratype): ovipositor 68, gonostylus approx. 10, last tergite 60, [mid tibia 105]. Ovipositor Fig. 283, hypopygium Fig. 284.

♂. Length: approx. 0.75 mm.

Similar to female except following. Coloration slightly darker and infuscation of forewing distinctly paler. Antennal toruli with their lower margins clearly a little above ventral margins of eyes (Fig. 285), otherwise differs from female as in generic description. Relative measurements (paratype): minimum frontovertex width 36, head width 63, scape length 35, proportions of antenna as in Fig. 286; aedeagus length 31, length mid tibial spur 14, genitalia as in Figs 287, 288.

DISTRIBUTION. India.

BIOLOGY. Unknown.

MATERIAL EXAMINED

Holotype ♀, **India:** Tamil Nadu, 3 km E. Manjaler Dam, 15–18.x.1979 (J. S. Noyes) (BMNH).

Paratypes. **India:** 1 ♀, 1 ♂, same data as holotype (BMNH).

COMMENTS. We consider that *Doliphoceras tachikawai* Shafee, Alam & Agarwal (1975: 26) also belongs to this genus (**comb. n.**). It differs from *fuscipennis* in coloration, hyaline forewings and lack of notaular lines. There is also a possible third species which appears to be distinguishable

from *fuscipennis* in having the mesoscutum and scutellum more silky in appearance and more dense, white, appressed setae, the subapical fuscous marking of the forewing more oblique and the body coloration of the female generally more reddish or orange. This third species has been found in India and Zimbabwe (BMNH), but may only be a form of *fuscipennis*.

### **BACHIANA** Girault

(Key couplet: 368)

*Bachiana* Girault, 1940: 149. Type-species: *Bachiana curiosa* Girault, by monotypy.

DISTRIBUTION AND SPECIES. One species, Australia only: *curiosa* Girault (1940: 149).

BIOLOGY. Parasites of Diaspididae (Homoptera).

COMMENTS. Placement of the genus is difficult because the type-material is in poor condition. However, the mandible (one tooth and a truncation) and wing venation suggest that it could be placed in the Microteryni (Encyrtinae). It is possibly related to the genera placed in the subtribe Syrphophagina and can be easily separated from these by having an anelliform first funicle segment, interrupted linea calva and by the shape of the mandible. Girault's unpublished manuscript (QM) states that the clava is entire, but the only clava located on either of the two slides containing syntypes appears to be two-segmented. There appear to be no intact female antennae on either of these slides. (See also comments under *Coccidoctonus*.)

### **BAEOANUSIA** Girault

(Key couplets: 203, 485, 523)

*Baeoanusia* Girault, 1915a: 163. Type-species: *Baeoanusia magniclava* Girault, by original designation.

DISTRIBUTION AND SPECIES. Australia only, three species: *albifunicle* Girault (1932a: 3), *magniclava* Girault (1915a: 164) and *persimilis* Girault (1915a: 164).

BIOLOGY. Unknown. However, *albifunicle* (which is misplaced in this genus, see below) has been reared from the eggs of *Paropsis* sp. (Coleoptera, Chrysomelidae) (Riek, 1962c).

COMMENTS. *Baeoanusia albifunicle* is misplaced in this genus, appearing to be intermediate between *Mesanusia* and *Baeoanusia* and, in some respects, has some resemblance to a large species of *Zaomma*. Almost certainly a new genus is required to accommodate it. However, since the species can be reasonably well placed in *Baeoanusia*, we feel that a new genus is unnecessary at the present time, at least until fresh material becomes available and the relationships between these genera can be studied in more detail.

The genus belongs to the tribe Cheiloneurini (Encyrtinae) and is closest to *Neblatticida* from which it can be separated by having hyaline wings, whilst *Neblatticida* has infusate wings. A more detailed study of fresh material may indicate that the two genera should be considered synonymous. *Baeoanusia* can be separated from other members of the tribe by having finely punctate sculpture on the head and dorsum of the thorax (as in *Blastothrix*) and a large antennal clava, and lacking an apical tuft of setae on the scutellum.

### **BEETHOVENA** Girault

(Key couplet: 64)

*Beethovena* Girault, 1932a: 3. Type-species: *Beethovena longifasciata* Girault, my monotypy.

DISTRIBUTION AND SPECIES. One species, Australia only: *longifasciata* Girault (1932a: 2).

BIOLOGY. Unknown.

COMMENTS. The genus is very close to *Metaphycus* (Aphycini, subtribe Paraphycina) from which it can be separated by having a five-segmented funicle, whilst *Metaphycus* has a six-segmented funicle.

**BLASTOTHRIX** Mayr

(Key couplets: 209, 446)

*Blastothrix* Mayr, 1876: 697. Type-species: *Encyrtus sericeus* Dalman, by designation of Ashmead (1900b: 389).

DISTRIBUTION AND SPECIES. Twenty-seven species, Holarctic, Afrotropical, Oriental; three species from review area: *britannica* Girault; Sugonjaev (1964: 382) (Pakistan), *sericea* (Dalman; Sugonjaev, 1964: 381) (Pakistan, India) and *siddiqii* (Bhatnagar, 1952: 167) (**comb. n.** from *Encyrtus*) (India), also one undetermined species from India (BMNH).

REFERENCE. Revision of Palearctic species: Sugonjaev (1964).

BIOLOGY. Parasites of Coccidae and possibly also Kermesidae (Homoptera).

COMMENTS. We have not seen the holotype of *Encyrtus siddiqii* but from the description of the species and the host record we feel certain that it belongs in *Blastothrix*.

Trjapitzin (1973b) places the genus in the tribe Aphycini (subtribe Blastothrichina) which we believe may be incorrect since it appears to be closely related to *Psyllaephagus*. The latter is placed in the tribe Trechnitini, subtribe Metaprimonitina. The subtribe Blastothrichina should probably be transferred from the Aphycini to the Trechnitini, but we do not formally propose this since it is beyond the scope of the present work. *Blastothrix* is recognisable by the metallic green or blue-green colour, deep punctate sculpture of the head and thorax, the mandible having one tooth and a broad truncation, and the forewing with a marginal vein at least three times as long as broad.

**BLEPYRUS** Howard

(Key couplet: 479)

*Blepyrus* Howard, 1898b: 233. Type-species: *Blepyrus mexicanus* Howard, by designation of Ashmead (1900b: 373).

*Coccophoctonus* Ashmead, 1900b: 375. Type-species: *Coccophoctonus dactylopii* Ashmead, by original designation.

DISTRIBUTION AND SPECIES. Three species, circumtropical; one from review area: *insularis* (Cameron; Kerrich, 1967: 226) found throughout the area except New Zealand.

REFERENCE. Revision: Kerrich (1967: 225–228).

BIOLOGY. Parasites of Pseudococcidae (Homoptera).

COMMENTS. The genus is a member of the tribe Aenasiini (see comments under *Aenasius*). It can be separated from other related genera by the characters given in the key, notably the stigmal vein of the forewing being clearly shorter than the postmarginal and the relatively wide frontovertex. Kerrich (1967: 188–190) also provides a key to most of the genera of the tribe.

**BORROWELLA** Girault

(Key couplets: 359, 465)

*Borrowella* Girault, 1923b: 99. Type-species: *Borrowella bioculata* Girault, by monotypy.

DISTRIBUTION AND SPECIES. Australia only; two species: *bioculata* Girault (1923b: 99) (= *Borrowella consobrina* Girault, 1923d: 2 **syn. n.**) and *punctatinotum* Girault (1923b: 100); possibly also one further species near *punctatinotum* but with the ovipositor less exerted.

BIOLOGY. Unknown.

COMMENTS. *Borrowella consobrina* appears to be a colour form of *bioculata* and the two are therefore regarded as synonymous.

The genus probably belongs in the tribe Bothriothoracini. It can be separated from other

members of the tribe principally by the darkened forewing and the postmarginal vein being longer than the stigmal.

***BOTHRIOPHRYNE* Compere**

(Key couplet: 282)

*Bothriophryne* Compere, 1937: 45. Type-species: *Bothriophryne ceroplastae* Compere, by original designation.

DISTRIBUTION AND SPECIES. Seven species, Afrotropical; none from review area but two undescribed species from India (Agarwal *et al.*, 1980: 30).

REFERENCE. Prinsloo & Annecke (1978*b*: 323–325).

BIOLOGY. Parasites of Coccidae (Homoptera).

COMMENTS. The genus is close to *Trichomasthus* (Microteriyini, subtribe Microteriyina) and is most easily separated by having the antennal toruli relatively high on the head, their lowest margins at or above the level of the lowest eye margins (in *Trichomasthus* they are well below), and the marginal vein of forewing punctiform (in *Trichomasthus* it is generally much longer than broad).

***BOTHRIOTHORAX* Ratzeburg**

(Key couplet: 425)

*Bothriothorax* Ratzeburg, 1844: 209. Type-species: *Bothriothorax altensteinii* Ratzeburg, by monotypy. *Trimorphocerus* Dahlbom, 1857: 292. Type-species: *Bothriothorax altensteinii* Ratzeburg, by designation of Gahan & Fagan (1923: 149).

DISTRIBUTION AND SPECIES. Thirty species, Holarctic and Oriental; two undetermined species from Taiwan and India (BMNH, BPBM).

REFERENCE. Peck (1963: 375).

BIOLOGY. Parasites of larvae of Syrphidae (Diptera).

COMMENTS. Placed in the tribe Bothriothoracini, subtribe Bothriothoracina (Encyrtinae).

***BRACHYPLATYCERUS* De Santis**

(Key couplet: 52)

*Brachyplatycerus* De Santis, 1972: 49. Type-species: *Brachyplatycerus minutum* De Santis, by original designation.

DISTRIBUTION AND SPECIES. One species, Neotropical; also one species reported from India (Hayat & Subba Rao, 1981).

BIOLOGY. Unknown.

COMMENTS. We have been unable to locate the material referred to by Hayat & Subba Rao (1981: 109) and presumably either the material was misidentified or has been lost.

The genus is related to *Pentelicus* (see comments under *Pentelicus*), differing in the number of funicle segments (see key).

***CAENOHOMALOPODA* Tachikawa**

(Key couplet: 54)

*Caenohomalopoda* Tachikawa, 1979*a*: 169. Type-species: *Pseudhomalopoda shikokuensis* Tachikawa, by original designation.

DISTRIBUTION AND SPECIES. Four species, eastern Palaearctic, Oriental, Australasian; two from

review area: *guamensis* (Fullaway; Tachikawa, 1979a: 169) (Mariana Is., Hawaiian Is.) and *nagaii* (Tachikawa, 1978: 65) (Indonesia), also undetermined material from India, Taiwan, Indonesia, Brunei, Philippines and Australia (BMNH, BPBM).

REFERENCE. Key to species: Tachikawa *et al.* (1981).

BIOLOGY. Parasites of Diaspididae (Homoptera).

COMMENTS. In addition to the characters given by Tachikawa (1979a) to separate this genus from *Pseudhomalopoda* Girault we have found that the shape of the pronotum is important. In *Caenohomalopoda* the posterior margin of the pronotum is almost straight, whereas in *Pseudhomalopoda* it is strongly concave and medially incised.

The genus belongs in the tribe Habrolepidini, subtribe Habrolepidina (Encyrtinae) and can be separated from most other genera included here by the characters given in the key or by the key to genera of the subtribe provided by Tachikawa (1979a).

### **CALLIPTEROMA** Motschulsky

(Key couplet: 229)

*Callipteroma* Motschulsky, 1863: 35. Type-species: *Callipteroma quinqueguttata* Motschulsky, by designation of Ashmead (1900b: 402).

*Calocerinella* Girault, 1913d: 46. Type-species: *Calocerinella trifasciata* Girault, by original designation.

*Vosleria* Timberlake, 1926: 1. Type-species: *Vosleria signata* Timberlake, by original designation. **Syn. n.**

DISTRIBUTION AND SPECIES. Five species, old World; three from review area: *australia* (Girault; Noyes, 1978: 543) (= *Vosleria signata* Timberlake, 1926: 3 **syn. n.**) (Australia), *sexguttata* Motschulsky; Noyes (1978: 546, 548) (Pakistan to Australia) and *testacea* Motschulsky; Noyes (1978: 549) (Pakistan to Australia).

REFERENCE. Revision: Noyes (1978).

BIOLOGY. Parasites of Pseudococcidae (Homoptera).

COMMENTS. The holotype of *Vosleria signata* has not been examined, but it is clear from Timberlake's detailed description that it is the same as *australia*.

We regard *sexguttata* and *quinqueguttata* as synonymous. This synonymy was first proposed by Bouček (1977a: 70) and has been confirmed by the examination of much fresh material collected in southern India and other parts of the region.

The genus is placed in the tribe Anagyrini, subtribe Leptomastideina (Tetracneminae) by Trjapitzin (1973a), although the Leptomastideina is here considered synonymous with the Anagyrina (see comments under *Leptomastidea*). The forewing venation suggests that *Callipteroma* may possibly be better placed in the Dinocarsini (or Dinocarsina if reduced to subtribal status within the Anagyrini).

### **CARABUNIA** Waterston

(Key couplet: 224. Figs 128–131)

*Carabunia* Waterston, 1928a: 249. Type-species: *Carabunia myersi* Waterston, by original designation.

*Elijahia* Girault, 1928a: 1. Type-species: *Elijahia poeta* Girault, by monotypy. **Syn. n.**

*Schillerana* Girault, 1932a: 6. Type-species: *Schillerana dilatata* Girault, by monotypy. **Syn. n.**

DISTRIBUTION AND SPECIES. Seven species, Neotropical, Oriental and Australasian; four from review area: *dilatata* (Girault, 1932a: 6) (**comb. n.** from *Schillerana*) (Australia), *longimarginalis* Subba Rao (1973: 486) (India, Malaysia), *orientalis* Subba Rao (1971: 211) (India, Bangladesh, Thailand) and *poeta* (Girault, 1928a: 1) (**comb. n.** from *Elijahia*) (Australia), also unidentified material from India to Philippines, Papua New Guinea and Solomon Is. (BMNH, BPBM, CNC, GC).

REFERENCE. Part revision: Subba Rao (1973).

BIOLOGY. Parasites of nymphs of Cercopidae (Homoptera).

COMMENTS. The types of *dilatata* and *poeta* have been examined (QM) and are congeneric with the two above species described in *Carabunia* by Subba Rao. The Oriental and Australasian species of the genus (which could be called the *poeta*-group) differ from the Neotropical species in having a much more elongate postmarginal vein (that in *myersi* is very obscure, or perhaps absent, shortly distal to the apex of the stigmal vein); we do not consider this to be a generic difference.

The genus is placed in the tribe Neoclaudiini (Encyrtinae) by Trjapitzin (1973*b*) but we believe that this tribe is too narrowly defined (see comments under *Anagyrodes*). It can be separated from related genera by the combination of the mandible having one long sickle-shaped tooth, solid clava, long marginal and postmarginal veins of forewing, lightly to moderately infuscate forewing and the hypopygium more or less extending to apex of gaster.

### **CERAPTEROCEROIDES** Ashmead

(Key couplet: 108. Figs 289, 290)

*Cerapteroceroides* Ashmead, 1904*b*: 156. Type-species: *Cerapteroceroides japonicus* Ashmead, by monotypy.

*Metacerapterocerus* Ishii, 1928: 151. Type-species: *Cerapterocerus fortunatus* Ishii, by original designation.

DISTRIBUTION AND SPECIES. Three species, Oriental and eastern Palaearctic; two species from review area: *japonicus* Ashmead; Tachikawa (1963: 148) (Pakistan) and *similis* (Ishii; Tachikawa, 1963: 150) (India); also undetermined material from Sri Lanka, India, Taiwan, Indonesia and Sarawak (BMNH, BPBM, UCR).

REFERENCE. Revision: Tachikawa (1963: 142–151).

BIOLOGY. Hyperparasitic on various Homoptera (Psyllidae, Aphididae, Coccidae, Pseudococcidae, Diaspididae) via other Encyrtidae and Aphelinidae (Hymenoptera).

COMMENTS. Placed in the tribe Cerapterocerini (Encyrtinae). It can be separated from other closely related genera by the characters provided in the key and by the key given by Annecke (1967: 100–101).

### **CERAPTEROCERUS** Westwood

(Key couplets: 85, 108. Figs 41, 291, 292)

*Cerapterocerus* Westwood, 1833*b*: 495. Type-species: *Cerapterocerus mirabilis* Westwood, by monotypy.

*Jurinia* Costa, 1839: 115. Type-species: *Jurinia platicera* Costa, by designation of Bouček (1970: 86).

*Telegraphus* Ratzeburg, 1848: 152. Type-species: *Telegraphus maculipennis* Ratzeburg, by monotypy.

DISTRIBUTION AND SPECIES. Eight species, Holarctic, Afrotropical, Oriental, Australasian; four species from review area: *australia* Girault (1917*e*: 97) (Australia), *emersoni* Girault (1915*a*: 102) (Australia), *subapterus* Girault (1922*a*: 48) (Australia) and *virens* Agarwal (1963: 398) (India), also further undetermined material from India, China, Hong Kong, Singapore, Malaysia, Sarawak and Sulawesi (BMNH, BPBM, USNM).

BIOLOGY. Hyperparasites of Coccidae (Homoptera) via other Encyrtidae.

COMMENTS. The holotype of *australia* appears to be lost but it may be possible to recognise the species from Girault's description when freshly collected material becomes available. However, until that time the name should be considered a nomen dubium.

Placed in the tribe Cerapterocerini (Encyrtinae). It can be separated from other closely related genera by the characters given in the key and also by the key provided by Annecke (1967: 100–101).

**CERAPTROCERELLA** Girault

(Key couplets: 115, 128)

*Ceraptrocerella* Girault, 1918: 1. Type-species: *Ceraptrocerella apus* Girault, by original designation.  
*Austrotropidia* Kerrich, 1978: 143. Type-species: *Tropidophryne flandersi* Compere, by original designation. **Syn. n.**

DISTRIBUTION AND SPECIES. Australia only; one species: *apus* Girault (1918: 1) (= *Tropidophryne flandersi* Compere; Kerrich, 1978: 143 **syn. n.**).

BIOLOGY. Parasites of Pseudococcidae (Homoptera).

COMMENTS. We have not seen the holotype of *flandersi* but a specimen determined as this by Kerrich (who has examined the holotype) is the same species as one compared with the syntypes of *apus*.

The genus belongs in the tribe Chrysoplatygerini, which also contains *Chrysoplatygerus*, *Hambletonia*, *Neoplatygerus* and *Tropidophryne*. It can be separated from these genera using the characters given in the key, or by using the key provided by Kerrich (1978: 113–114).

**CERCHYSIELLA** Girault

(Key couplets: 215, 324, 445, 447, 509. Fig. 127)

*Aratus* Howard, 1897: 155. Type-species: *Aratus scutellatus* Howard, by monotypy. [Homonym of *Aratus* Milne-Edwards, 1853.] **Syn. n.**

*Cerchysiella* Girault, 1914b: 60. Type-species: *Cerchysiella nigrella* Girault, by monotypy.

*Zeteticontus* Silvestri, 1915b: 343. Type-species: *Zeteticontus abilis* Silvestri, by original designation. **Syn. n.**

*Mirrencyrtus* Girault, 1915a: 115. Type-species: *Mirrencyrtus glabriscutellum* Girault, by original designation. **Syn. n.**

*Ericydnella* Girault, 1915a: 169. Type-species: *Ericydnella ashmeadi* Girault, by original designation. **Syn. n.**

*Aratiscus* Ghesquière, 1946: 368. [Replacement name for *Aratus* Howard.] **Syn. n.**

*Prolitomastix* Hoffer, 1954: 173. Type-species: *Prolitomastix vestonicensis* Hoffer, by original designation. **Syn. n.**

DISTRIBUTION AND SPECIES. Eighteen species, cosmopolitan; eight from review area: *abilis* (Silvestri, 1915b: 345) (**comb. n.** from *Zeteticontus*) (Pakistan), *glabriscutellum* (Girault, 1915a: 115) (**comb. n.** from *Mirrencyrtus*) (= *Mimencyrtus* [sic] *arboris* Girault, 1923a: 47 **syn. n.**) (Australia), *kamathi* (Mani & Saraswat in Mani et al., 1974: 84) (**comb. n.** from *Prionomitus*) (India), *nigra* Girault (1915a: 82) (Australia), *nigrella* Girault (1914b: 60) (= *Ericydnella ashmeadi* Girault, 1915a: 169 **syn. n.**) (Australia), *perkinsi* (Timberlake, 1924: 402) (**comb. n.** from *Zeteticontus*), *umbilicata* Girault (1915a: 83) (Australia) and *utilis* (Noyes, 1982: 457) (**comb. n.** from *Zeteticontus*) (Hawaiian Is.), also further undetermined material from throughout the region except New Zealand (BMNH, BPBM, CNC, AMNH, USNM, UCR, HC).

REFERENCE. Revision: Subba Rao (1972).

BIOLOGY. Parasites of larvae of Nitidulidae, Erotylidae and Silvanidae (Coleoptera) and apparently also Trypetidae (Diptera) (Tachikawa, 1981: 100).

COMMENTS. Girault (1915a: 82) published the formal description of the genus *Cerchysiella* stating that the type-species was *nigra* described on the same page. However, the generic name had been validated one year previously with the publication of the description of *Cerchysiella nigrella* Girault. The holotype of *Cerchysiella nigrella* has been examined (QM) and is congeneric with *Zeteticontus abilis* Silvestri, the type-species of *Zeteticontus*. Unfortunately therefore the name *Cerchysiella* has precedence over *Zeteticontus*. We do not feel that a submission to the International Commission on Zoological Nomenclature to ask for suppression of *Cerchysiella* in favour of *Zeteticontus* is necessary since the name *Zeteticontus* has been

relatively little used in the literature. In addition to the above, therefore, we propose that the following extra-limital species all be transferred to *Cerchysiella* (all **comb. n.**): *amurensis* Khlopunov (from *Zeteticontus*), *centennalis* Erdös (from *Zeteticontus*), *insularis* Howard (from *Bothriothorax*), *laevigata* De Santis (from *Aratiscus*), *laeviscutum* Thomson (from *Microterys*), *planiscutellum* Mercet (from *Zeteticontus*), *punctiscutellum* Subba Rao (from *Zeteticontus*), *scutellata* Howard (from *Aratus*), *takenakai* Tachikawa (from *Zeteticontus*) and *xanthopus* Masi (from *Zeteticontus*).

The genus is placed in the tribe Bothriothoracini, subtribe Coenocercina. It can be separated from related genera by the characteristic arrangement of the pegs constituting the filum spinosum (Fig. 127), and from related genera (*Pentacladocerus* and *Zaommoencyrtus*) by the characters given in the key.

### **CERCHYSIUS** Westwood

(Key couplets: 288, 345. Fig. 176)

*Cerchysius* Westwood, 1832: 128. Type-species: *Encyrtus urocerus* Dalman, by designation of Westwood (1840: 73).

**DISTRIBUTION AND SPECIES.** Eleven species, cosmopolitan; five from review area: *australiensis* Ashmead (1900a: 342) (Australia), *australis* (Girault, 1914b: 59) (**comb. n.** from *Copidosoma*) (= *Cerchysius australis* Girault, 1915a: 85) (Australia), *hispidiscutum* Girault (1915a: 83) (Australia), *laticeps* Kerrich (1954: 372) (India, Malaysia) and *robustus* Girault (1915a: 84) (Australia), also further material, which may include several undescribed species, from India, Malaysia, Philippines and Australia (BMNH, BPBM, HC).

**REFERENCE.** Partial world revision: Kerrich (1954).

**BIOLOGY.** Parasites of Chamaemyiidae (Diptera).

**COMMENTS.** Girault (1917e: 96) synonymised *Copidosoma australis* with *Cerchysius australis*. It is clear from a comparison of the two descriptions that he inadvertently described the same specimen as a new species in two different genera in separate publications.

The genus is placed in the Microterytini, subtribe Pseudencyrtina (Encyrtinae) by Trjapitzin (1973b). However, it may be related to the subtribe Metaprionomitina of the Trechnitini since it can be very difficult to separate from some Australian species of *Psyllaephagus* which also have a long exerted ovipositor (see key).

### **CERCABELUS** Walker

(Key couplet: 49. Figs 17, 18, 293, 294)

*Cercobelus* Walker, 1842: vi. Type-species: *Encyrtus jugaeus* Walker, by monotypy.

**DISTRIBUTION AND SPECIES.** One described species, Europe; at least one undescribed species from Afrotropical region (BMNH) and from review area: India, Sarawak and Australia (BMNH, BPBM, QM, ANIC).

**REFERENCE.** Kryger (1951: 99–103).

**BIOLOGY.** Parasites of nymphs of Psyllidae (Homoptera).

**COMMENTS.** The genus is commonly attributed to Walker and dated 1840. However, Graham (1969) threw some doubt on the authorship of the genus, saying that the plate on which *Cercobelus jugaeus* was figured was actually drawn by Haliday. It is quite possible that Haliday drew the figures and that Walker wrote the legends to the plates. Whichever is the truth of the matter we shall probably never know and therefore we retain Walker as the author of the genus. Almost certainly the date commonly attributed is incorrect since the legends to the figures were published along with the index to volume 1 of the *Entomologist* and it is highly unlikely that the

index was published before the final part of this volume which was published in 1842. Therefore we have no hesitation in dating the genus 1842 and not 1840.

The genus is the sole representative of the tribe Cercobelini (Encyrtinae). Trjapitzin (1973b) states that the mandible is tridentate which is incorrect since a fourth tooth is present (Fig. 293). The structure of the gaster is very unusual in the Encyrtidae since it is highly telescopic (see Kryger, 1951: 101–102) and is probably adapted for its particular mode of oviposition.

### CHARITOPUS Förster

(Key couplet: 263. Fig. 7)

*Charitopus* Förster, 1856: 31. Type-species: *Charitopus fulviventris* Förster, by designation of Förster (1860: 112).

*Leptorhopala* Motschulsky, 1863: 60. Type-species: *Leptorhopala cuprifrons* Motschulsky, by monotypy.

*Eupelmomorpha* Girault, 1915a: 43. Type-species: *Eupelmomorpha quadricolor* Girault, by designation of Gahan & Fagan (1923: 60). **Syn. n.**

*Diversicornia* Mercet, 1916c: 371. Type-species: *Diversicornia pinicola* Mercet, by original designation.

**DISTRIBUTION AND SPECIES.** Thirteen species, Palaearctic, Afrotropical, Oriental, Australasian; seven species from review area: *apicatus* (Mani & Saraswat in Mani *et al.*, 1974: 79) (India), *bicolor* (Girault, 1915a: 44) (**comb. n.** from *Eupelmomorpha*) (Australia), *fulviventris* Förster; Trjapitzin (1969a: 675) (India), *cuprifrons* (Motschulsky; Trjapitzin, 1964b: 242) (Sri Lanka), *panchganina* (Mani & Saraswat in Mani *et al.*, 1974: 81) (India), *quadricolor* (Girault, 1915a: 43) (**comb. n.** from *Eupelmomorpha*) (Australia) and *tricolor* (Girault, 1915a: 43) (**comb. n.** from *Eupelmomorpha*) (= *Eupelmomorpha hawthornei* Girault, 1915a: 44 **syn. n.**), also undetermined material from Sulawesi and Bangladesh (BMNH).

**REFERENCES.** Keys to species: Trjapitzin (1969a: 675) and Hoffer (1980: 388).

**BIOLOGY.** Unknown, but almost certainly parasites of Pseudococcidae (Homoptera).

**COMMENTS.** There appears to be some considerable variation in colour within some species and it is probable that many of the above species are synonymous since they are separated largely on colour differences, e.g. *bicolor*, *quadricolor* and *tricolor*.

The genus is placed in the tribe Charitopidini (Tetracneminae) which probably contains some of the most primitive encyrtids known. They are characterised by the very long marginal vein of the forewing, well-developed notaular lines and short last gastral tergite so that the cercal plates are situated near the apex of the gaster. Most genera have membranous areas surrounding the mid coxae which allow the mid legs to be flexed forwards, particularly when dead. This is also characteristic of the Tanaostigmatidae and some Eupelmidae.

### CHEILONEURELLA Girault

(Key couplets: 259, 309, 408. Figs 149, 155, 295)

*Cheiloneurella* Girault, 1915a: 177. Type-species: *Cheiloneurella binotativentris* Girault, by original designation.

**DISTRIBUTION AND SPECIES.** Only one described species: *binotativentris* Girault (1915a: 177) (Australia), but also other material, containing at least one undescribed species, from India, Thailand, Hong Kong, Malaysia, Indonesia and Philippines (BMNH, BPBM).

**BIOLOGY.** Unknown.

**COMMENTS.** The genus very probably belongs in the tribe Cheiloneurini (Encyrtinae) and can be separated from other genera of the tribe by having a very long pronotum which is triangular in dorsal view (Fig. 149) and not covered by the head.

**CHEILONEUROMYIA** Girault

(Key couplet: 379)

*Cheiloneuromyia* Girault, 1915a: 178. Type-species: *Cheiloneuromyia simpliciscutellum* Girault, by original designation.

DISTRIBUTION AND SPECIES. Three species, Oriental and Australasian: *javensis* Girault (1916c: 480) (Indonesia, Hawaiian Is.), *planchoniae* (Howard in Howard & Ashmead, 1896: 637) (**comb. n.** from *Encyrtus*) (Sri Lanka) and *simpliciscutellum* Girault (1915a: 178) (Australia), also some undetermined material from India and Solomon Is. (BMNH, BPBM).

BIOLOGY. Parasites of Coccidae (Homoptera).

COMMENTS. The genus most probably belongs in the tribe Cheiloneurini (Encyrtinae).

**CHEILONEURUS** Westwood

(Key couplets: 87, 101, 103, 131, 351, 384, 474, 487. Figs 47, 50)

*Cheiloneurus* Westwood, 1833a: 343. Type-species: *Encyrtus elegans* Dalman, by monotypy.

*Chrysopophagus* Ashmead, 1894: 245. Type-species: *Chrysopophagus compressicornis* Ashmead, by monotypy.

*Blatticida* Ashmead, 1904c: 305. Type-species: *Blatticida pulchra* Ashmead, by original designation.

*Saronotum* Perkins, 1906: 259. Type-species: *Saronotum australiae* Perkins, by designation of Gahan & Fagan (1923: 130).

*Cristatothorax* Girault, 1911: 169. Type-species: *Cristatothorax pulcher* Girault, by original designation.

*Eusemionella* Girault, 1915a: 78. Type-species: *Eusemionella cristata* Girault, by original designation.

**Syn. n.**

*Chrysopophagoides* Girault, 1915a: 90. Type-species: *Chrysopophagoides westwoodi* Girault, by monotypy. **Syn. n.**

*Paracheiloneurus* Girault, 1915a: 119. Type-species: *Cheiloneurus perpulcher* Girault, by original designation (as subgenus of *Cheiloneurus*). **Syn. n.**

*Epicheiloneurus* Girault, 1915a: 173. Type-species: *Epicheiloneurus albicoxa* Girault, by original designation. **Syn. n.**

*Eusemionopsis* Girault, 1918: 3. Type-species: *Eusemionopsis centaurus* Girault, by original designation. **Syn. n.**

*Metacheiloneurus* Hoffer, 1957: 336. Type-species: *Metacheiloneurus moestus* Hoffer, by monotypy.

DISTRIBUTION AND SPECIES. Well over 100 species, cosmopolitan; 45 from review area: *albifuniculus* Hayat, Alam & Agarwal (1975: 48) (India), *axillaris* Hayat, Alam & Agarwal (1975: 55) (India), *australiae* (Perkins, 1906: 260) (Australia), *bangalorensis* (Subba Rao, 1957: 382) (India), *basiri* Hayat, Alam & Agarwal (1975: 53) (India), *beerwahi* (Girault, 1925b: 100) (**comb. n.** from *Epicheiloneurus*) (Australia), *burnsi* (Girault, 1926b: 69) (**comb. n.** from *Eusemionella*) (Australia), *cheles* (Walker, 1839: 37) (**comb. n.** from *Encyrtus*) (Australia), *chlorodryini* Perkins (1906: 261) (= *Cheiloneurus dubius* Girault, 1915a: 88 **syn. n.**) (Australia), *chrysopae* Fullaway (1946: 207) (Mariana Is.), *cinctiventris* (Girault, 1929b: 311) (**comb. n.** from *Epicheiloneurus*) (Australia), *cristatus* (Girault, 1915a: 78) (**comb. n.** from *Eusemionella*) (Australia), *cupreicollis* (Ashmead; Noyes, 1979: 50) (Australia), *diversicolor* Hayat, Alam & Agarwal (1975: 134) (India), *dumasi* Girault (1932a: 2) (Australia), *flaccus* (Walker, = *americanus* Perkins, 1906: 260) (Hawaiian Is.), *gonatopodis* Perkins (1906: 261) (Australia), *hemipterus* (Girault, 1920a: 48) (**comb. n.** from *Eusemionella*) (Australia), *hugoi* (Girault, 1915a: 156) (**comb. n.** from *Cristatothorax*) (= *Cristatothorax nobilis* Girault, 1922b: 100 **syn. n.**) (Australia), *javanus* Perkins (1912: 17) (Java, Brúnei), *javensis* Girault (1917a: 3) (Java), *kerrichi* Hayat, Alam & Agarwal (1975: 127) (India), *latifrons* Hayat, Alam & Agarwal (1975: 108) (India), *laticapus* (Girault, 1916c: 481) (**comb. n.** from *Cristatothorax*) (Malaysia, Java), *longicornis* Hayat, Alam & Agarwal (1975: 120) (India), *malayensis* Noyes & Chua (1977: 544) (Malaysia), *margiscutellum* (Girault, 1917g: 141) (**comb. n.** from *Bavanusia* [sic]) (Australia), *mazzinini* (Girault, 1915a: 103) (**comb. n.** from *Chrysopophagus*) (Australia), *nepalensis* Khan

& Agarwal (1978: 23) (Nepal), *nigricornis* Hayat, Alam & Agarwal (1975: 122) (India), *novimandibularis* (Girault, 1915a: 158) (**comb. n.** from *Cristatothorax*) (= *Cristatothorax mandibularis* Girault, 1915a: 157 **syn. n.**, = *Cristatothorax mackayensis* Girault, 1915a: 158 **syn. n.**, = *Cristatothorax sublimis* Girault, 1929b: 314 **syn. n.**, = *Cristatothorax partipes* Girault, 1932a: 3 **syn. n.**) (Australia), *noxius* Compere (1925: 302) (Hawaiian Is.), *pasteuri* (Girault, 1915a: 159) (**comb. n.** from *Cristatothorax*) (= *Cristatothorax bidentimaxillae* Girault, 1915a: 157 **syn. n.**, = *Cristatothorax vinculum* Girault, 1915a: 159 **syn. n.**, = *Epicheiloneurus albicoxa* Girault, 1915a: 177 **syn. n.**, = *Cristatothorax bidentimaxillae poeta* Girault, 1932a: 3 **syn. n.**) (Australia), *perpulcher* Girault (1915a: 88) (Australia), *purpureicinctus* (Girault, 1915a: 104) (**comb. n.** from *Chrysopophagus*) (= *Eusemionopsis centaurus* Girault, 1918: 3 **syn. n.**, = *Chrysopophagus variocelli* Girault, 1924a: 2 **syn. n.**) (Australia), *purpureiventris* Girault (1915a: 87) (Australia), *pyrillae* Mani (1939: 73) (India), *quadricolor* (Girault 1915a: 157) (Pakistan, India, Australia), *rara* (Girault, 1922a: 42) (**comb. n.** from *Eusemionella*) (Australia), *regis* (Girault, 1932a: 3) (**comb. n.** from *Cristatothorax*) (Australia), *saissetiae* Noyes & Chua (1977: 541) (Malaysia), *seminigriclavus* Girault (1915a: 88) (Australia), *unicolor* Mercet (1922a: 155) (Java), *viridiscutum* (Girault, 1915a: 158) (**comb. n.** from *Cristatothorax*) (Australia), *westwoodi* (Girault, 1915a: 90) (**comb. n.** from *Chrysopophagoides*) (Australia) and *yasumatsui* Trjapitzin (1971b: 123) (India), also probably many other species amongst material from throughout the region (BMNH, BPBM, DSIR, QM, ANIC, CNC, UCR, HC).

REFERENCES. Key to Palaearctic species: Trjapitzin (1971b: 123–125), key to Indian species: Hayat *et al.* (1975: 45–47), Khan & Agarwal (1978: 21).

BIOLOGY. Parasites of Dryinidae and chalcids (Hymenoptera), mainly Aphelinidae and Encyrtidae, parasitic on other insects, notably Homoptera (Auchenorrhyncha, also Coccidae, Pseudococcidae, etc.) and also predatory Diptera, e.g. Drosophilidae.

COMMENTS. The single extant female syntype of *Encyrtus cheles* Walker (BMNH) is here designated LECTOTYPE. It belongs to the same species-group as *novimandibularis*, but is in poor condition, lacking both forewings and most of the antennae.

We have not examined the holotype of *Cheiloneurus rufescens* Motschulsky (1863: 53), but according to Z. Bouček (pers. comm.) it belongs to the family Eulophidae.

The genus is placed in the tribe Cheiloneurini (Encyrtinae). It appears to be a very large and diverse genus whose limits are uncertain. Generally speaking, it is characterised by the arrangement of the setae in the basal cell of the forewing, by the wing venation (relatively long marginal and short stigmal and postmarginal veins), normally infusate forewing, the usual presence of an apical tuft of setae on the scutellum, and the hypopygium never reaching the apex of the gaster. We have included here in *Cheiloneurus* two unusual species, one being *cinctiventris* which has the unusual character of the basal cell of the forewing being almost entirely setose and the other, an undescribed species from Papua New Guinea (BPBM), which has the forewing entirely hyaline and an unusually long marginal vein (Fig. 50). It is possible that once this difficult complex of genera (which includes *Tobiasia* Trjapitzin, *Neabrolepoideus*, *Baeoanusia*, *Neblatticida* and *Mesocalocerinus*) is studied in more detail a number of them will be considered synonymous with *Cheiloneurus*.

### CHRYSOPLATYCERUS Ashmead

(Key couplet: 116. Figs 54, 55)

*Rileyia* Howard in Smith, 1888: 80. Type-species: *Rileyia splendens* Howard, by monotypy. [Homonym of *Rileyia* Ashmead, 1888.]

*Chrysoplatycerus* Ashmead, 1889: 38. [Replacement name for *Rileyia* Howard.]

*Encyrtolophus* De Santis, 1972: 49. Type-species: *Encyrtolophus flavicollis* De Santis, by original designation.

*Paraplatycerus* Hall, 1974: 19. Type-species: *Paraplatycerus citriculus* Hall, by original designation.

*Metaplatycerus* Gordh & Trjapitzin in Trjapitzin & Gordh, 1978a: 384. Type-species: *Chrysoplatycerus ferrisi* Timberlake, by original designation.

**DISTRIBUTION AND SPECIES.** Four species, New World, Afrotropical; one species in review area: *splendens* (Howard; Kerrich, 1978: 140) (Hawaiian Is.).

**REFERENCE.** Revision: Kerrich (1978: 136–142).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** Placed in the tribe Chrysoplatygerini, subtribe Chrysoplatygerina (Tetracneminae).

### **CLADISCODES** Subba Rao

(Key couplet: 480. Fig. 235)

*Cladiscodes* Subba Rao, 1977: 18. Type-species: *Cladiscodes sacchari* Subba Rao, by original designation.

**DISTRIBUTION AND SPECIES.** One species: *sacchari* Subba Rao (1977: 19) (India), also undetermined material from Laos, Vietnam and Australia (BMNH, BPBM).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** The genus is related to *Monodiscodes* and *Metaphaenodiscus* (tribe Aenasiini, see comments under *Aenasius*) and is characterised by the costal cell of the forewing being abruptly incised at its apex and by the distinct venation and shape of the wing (Fig. 235).

### **CLAUSENIA** Ishii

(Key couplet: 265)

*Clausenia* Ishii, 1923: 98. Type-species: *Clausenia purpurea* Ishii, by original designation.

**DISTRIBUTION AND SPECIES.** Eleven species, Afrotropical, Palaearctic, Oriental and Pacific; two from review area: *lacca* (Agarwal, 1962: 278) (India) and *purpurea* Ishii (Kerrich, 1967: 182) (S. China, Taiwan, Hawaiian Is.).

**REFERENCE.** Revision: Kerrich (1967: 181–188).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** Placed in the tribe Ericydnini by Trjapitzin (1973) but probably would be better placed in the Charitopidini.

### **COAGERUS** gen. n.

(Key couplet: 487. Figs 245, 296–299)

Type-species: *Coagerus bouceki* sp. n. Gender: feminine.

♀. *Head.* In facial view about as long as broad and in profile clearly less than twice as long as broad and anteriorly more or less gradually and evenly curved, but most strongly at top of antennal scrobes. Eye with posterior margin very slightly concave, almost straight, about one-third longer than broad, almost naked with some sparse short setae each not longer than half the diameter of a facet, eye just reaching occipital margin which is sharp. Malar space a little more than half length of eye and with sulcus absent. Frontovertex about one-fifth head width, ocelli forming an angle of about 45°, posterior ocellus a little less than half its own major diameter from occipital margin and touching eye margin. Antennal scrobes shallow, meeting dorsally and not quite reaching half way between toruli and anterior ocellus; antennal torulus separated from mouth margin by about half its length and from other torulus by about two to three times its own length, its upper margin at least about its own length below lowest eye margin, clypeal margin very shallowly produced below toruli. Antennal scape about twice as long as minimum width of frontovertex and slightly flattened and broadened, slightly more than three times as long as broad, pedicel slightly less than half as long as scape, cylindrical and clearly longer than any of the funicle segments the first four of which are distinctly transverse and the fifth and sixth subquadrate; clava three-segmented with an oblique apical truncation, the outer suture strongly converging with the inner, the truncated surface with two rows of 'tubular' setae and also a few scattered on other surfaces of apical segment of clava, these only visible on slide material examined at higher magnifications ( $\times 250+$ ); longitudinal sensillae on fifth

and sixth funicle segment and clava only. Frontovortex with shallow, regular, hexagonal, raised, reticulate sculpture, this becoming irregular and more longitudinally elongate on lower parts of face; setae very sparse, inconspicuous, brown and short, not present on frontovortex below anterior ocellus except along eye margin. Mandible with three equal acute apical teeth; maxillary and labial palpi not visible in slide-mounted material available.

*Thorax.* In side view with mesoscutum and scutellum distinctly convex and with metapleurum and propodeum together quite broadly in contact with hind coxa. In dorsal view with posterior margin of pronotum moderately concave; visible part of mesoscutum about twice as broad as long, its posterior margin slightly convex medially; axillae touching; scutellum a little broader than long, its apex rounded; propodeum medially not more than about one-tenth length of scutellum. Mesoscutum with very shallow, raised, squamiform-reticulate sculpture, that on axillae similar but a little deeper; scutellum with deep, fine, raised, longitudinally striate-reticulate sculpture (Fig. 297) clearly a lot deeper than sculpture of mesoscutum, apical one-fifth and extreme sides smooth and polished; dorsum of thorax with fairly numerous, moderately long, brown setae. Forewing more or less hyaline, but with a short fuscous streak in disc beyond venation and slight clouding below marginal vein, wing nearly three times as long as broad; lineal calva not interrupted and open; film spinosum present; submarginal vein with parastigma not conspicuously thickened, with an apical hyaline break; costal cell about 13 times as long as broad with only two or three setae dorsally near apex; marginal vein about four or five times as long as broad, about twice as long as stigmal which is clearly longer than postmarginal, stigmal vein with three apical sensillae arranged in a line. Hindwing hyaline, about two-thirds as long as forewing, about four to five times as long as broad, marginal fringe about one-third wing width. Mid tibial spur about as long as or a little shorter than basal mid tarsal segment.

*Gaster.* Slightly longer than thorax with ovipositor slightly exerted, cercal plates in basal half, hypopygium reaching to about half way along gaster, last tergite slightly shorter than mid tibia; ovipositor about one-third longer than mid tibia, gonostyli free and about one-third to two-fifths as long as ovipositor.

♂. Unknown.

COMMENTS. At first glance this new genus bears a striking superficial resemblance to *Paraleurocerus* Girault but is easily separated by the three-segmented clava (in *Paraleurocerus* it is entire), postmarginal vein of forewing shorter than stigmal (in *Paraleurocerus* it is clearly longer) and infuscate forewings. However, the basic type of wing venation, strongly tridentate mandible and structure of ovipositor suggest that it has some affinity with the group of genera to which *Paraleurocerus* belongs, i.e. tribe Copidosomatini, subtribe Ageniaspidiina, but can be separated from all other genera included in this subtribe by the postmarginal vein of the forewing being shorter than the stigmal.

The type-species of the genus is named in honour of Dr Z. Bouček.

### *Coagerus bouceki* sp. n.

(Figs 245, 296–299)

♀. Length (excluding ovipositor): 0.67–0.97 mm (holotype, 0.97 mm).

*Colour.* Head black dorsally with dull greenish and brassy reflections, around mouth and antennal toruli slightly purplish; antennal torulus, basal half or so of scape and pedicel dark brown, remainder of antenna yellow, the apex of clava indistinctly fuscous; pronotum purplish brown, mesoscutum shining metallic green, along anterior and posterior margins a little purplish; tegula brown; scutellum matt, black, apical one-fifth or so and extreme sides polished and metallic green; mesopleurum purplish brown, slightly shiny with some brassy, green and bluish reflections; propodeum dark purple-brown laterally on outer face with distinct bluish hue; legs white to yellow with apical one-third of mid femur, extreme base and a narrow sub-basal band on mid tibia and extreme apex of hind femur dark brown; forewing as in Fig. 245; gaster with venter and basal area dorsally yellow; apex dorsally continuing along sides to base dark purplish brown; exerted part of gonostyli dark brown, apices yellowish.

*Head.* Relative measurements (holotype): head length 51, head width (facial view) 51, head width (side view) 29, minimum frontovortex width 10.5, malar space 22, eye length 35, eye width 28, POL 6, OOL 0.25, scape length 23, scape width 6, other proportions of antenna Fig. 298. Smaller specimens tend to have the eyes a little smaller and thus the frontovortex correspondingly wider.

*Thorax.* Sculpture of scutellum Fig. 297. Relative measurements (holotype): forewing length 128,

forewing width 45, other proportions of forewing as in Figs 245, 296; hindwing length 90, hindwing width 19.

*Gaster*. Relative lengths (paratype): last tergite 53, ovipositor 85, gonostyli 26, [mid tibia 62]; genitalia Fig. 299.

♂. Unknown.

BIOLOGY. Unknown.

DISTRIBUTION. India.

#### MATERIAL EXAMINED

Holotype ♀, **India**: Tamil Nadu, Coimbatore, 25.ix.-1.x.1979 (J. S. Noyes) (BMNH).

Paratypes. **India**: 5 ♀, same data as holotype; 1 ♀, Karnataka, Bangalore, 3.xi.1979 (Z. Bouček) (BMNH).

### *COCCIDAPHYCUS* Blanchard

(Key couplet: 72. Fig. 32)

*Coccidaphycus* Blanchard, 1940: 110. Type-species: *Coccidaphycus nigricans* Blanchard, by original designation.

DISTRIBUTION AND SPECIES. One described species, Neotropical; one undescribed species from Sarawak (BMNH).

BIOLOGY. Parasites of Coccidae (Homoptera).

COMMENTS. The genus is closely related to *Trechnites* (tribe Trechnitini, subtribe Trechnitina), differing in biology (*Trechnites* spp. are parasites of nymphs of Psyllidae) and in the characters given in the key.

### *COCCIDENCYRTUS* Ashmead

(Key couplets: 194, 329, 519. Figs 117, 189)

*Coccidencyrtus* Ashmead, 1900b: 383. Type-species: *Encyrtus ensifer* Howard, by original designation.

*Encyrtomyia* Girault, 1915a: 131. Type-species: *Encyrtomyia albiflagellum* Girault, by original designation. **Syn. n.**

*Omphalencyrtus* Girault, 1915a: 169. Type-species: *Omphalencyrtus wallacei* Girault, by original designation. **Syn. n.**

*Coccidencyrtoides* Blanchard, 1940: 107. Type-species: *Coccidencyrtoides annulipes* Blanchard, by designation of De Santis (1967: 161).

*Neodelencyrtus* Hayat, Alam & Agarwal, 1975: 72. Type-species: *Neodelencyrtus mandibularis* Hayat, Alam & Agarwal, by original designation. **Syn. n.**

DISTRIBUTION AND SPECIES. Thirty-three species, cosmopolitan; nine species from review area: *albiflagellum* (Girault, 1915a: 131) (**comb. n.** from *Encyrtomyia*) (Australia), *albitarsis* (Girault, 1915a: 132) (**comb. n.** from *Encyrtomyia*) (Australia), *auricornis* (Girault, 1924a: 2) (**comb. n.** from *Epitetracnemus*) (Australia), *australis* (Girault, 1915a: 132) (**comb. n.** from *Encyrtomyia*) (Australia), *bicolor* (Girault, 1915a: 141) (**comb. n.** from *Coccidoxenus*) (Australia), *mandibularis* (Hayat, Alam & Agarwal, 1975: 74) (**comb. n.** from *Neodelencyrtus*) (India), *ochraceipes* Gahan (1927a: 18) (Hawaiian Is.), *secundus* (Girault, 1915a: 131) (**comb. n.** from *Encyrtomyia*) (Australia) and *wallacei* (Girault, 1915a: 169) (**comb. n.** from *Omphalencyrtus*) (Australia).

BIOLOGY. Parasites of Diaspididae (Homoptera).

COMMENTS. The type-species of *Neodelencyrtus* differs from the other species of *Coccidencyrtus* only in the number of segments in the maxillary and labial palpi: *mandibularis* has four-segmented maxillary and three-segmented labial palpi whilst all species of *Coccidencyrtus* that have been examined have one segment fewer in each. We do not think that this difference warrants separate generic status.

*Encyrtomyia* and *Omphalencyrtus* are rather more problematic. The type-species of *Omphalencyrtus* has the funicle distinctly four-segmented, whilst that of *Encyrtomyia* has the first segment with two partial sutures so that in slide-mounted material it could be taken as one-segmented (i.e. four-segmented funicle) and in dry-mounted material it appears three-segmented (i.e. six-segmented funicle). Examination of the extant types of *albitarsis* and *secundus* (which may be synonymous with *albiflagellum*) also shows this to be the case, whilst in *australis* the funicle is definitely four-segmented. Several other specimens with partial segmentation of the first funicle segment have also been examined. The occurrence of an apparent partial fusion of the first three funicle segments in some specimens, or species, is therefore not uncommon. Taking this into consideration and the fact that the first funicle segment of both *australis* and *wallacei* is longer than those following and is about as long as that which might be expected if the first three segments became fused, we have no hesitation in regarding *Omphalencyrtus* and *Encyrtomyia* as synonymous with *Coccidoencyrtus*.

The genus is placed in the tribe Habrolepidini (Encyrtinae) by Trjapitzin & Gordh (1978b).

### **COCCIDOCTONUS** Crawford

(Key couplets: 199, 300, 367. Fig. 125)

*Coccidoctonus* Crawford, 1912: 167. Type-species: *Coccidoctonus trinidadensis* Crawford, by original designation.

*Quaylea* Timberlake, 1919b: 214. Type-species: *Cerchysius whittieri* Girault, by original designation.

*Cerchysiopsis* Girault, 1922b: 108. Type-species: *Cerchysiopsis lowelli* Girault, by monotypy. **Syn. n.**

**DISTRIBUTION AND SPECIES.** Seven described species, New World, Australasia, Pacific; six species from review area: *dubius* (Girault, 1915a: 102) (**comb. n.** from *Rhopalencyrtoidea*) (= *Rhopalencyrtoidea cinctifemur* Girault, 1925a: 2 **syn. n.**, = *Paraenasomyia liszti* Girault, 1932b: 1 **syn. n.**) (Australia), *lowelli* (Girault, 1922b: 108) (**comb. n.** from *Cerchysiopsis*) (Australia), *oviductus* (Girault, 1915a: 85) (**comb. n.** from *Cerchysius*) (Australia), *psyllae* (Riek, 1962b: 189) (**comb. n.** from *Echthroplexis*) (Australia), *terebratus* (Hayat, Alam & Agarwal, 1975: 69) (**comb. n.** from *Echthroplexis*) (India) and *whittieri* (Girault; = *aliena* Timberlake, 1919b: 216) (Hawaiian Is., New Zealand), also several other species from Australia (BMNH, QM, ANIC).

**BIOLOGY.** Hyperparasites of Coccidae, Pseudococcidae and Psyllidae (Homoptera) via Pteromalidae and other Encyrtidae (Hymenoptera).

**COMMENTS.** Girault (1932b) incorrectly proposed *liszti* as a replacement name for *Rhopalencyrtoidea dubia* Girault, 1915, believing that it was preoccupied by *Paraenasomyia dubia* Girault, 1923 when he presumably transferred this species to *Paraenasomyia*. This is obviously incorrect and thus we revert to the original name. *Paraenasomyia dubia* Girault, 1923 is placed here in *Psyllaephagus*. It is possible that *Nezarhopalus caudatus* also belongs in *Coccidoctonus*.

This genus is closely related to *Syrphophagus* (tribe Microteryni, subtribe Syrphophagina). The subtribe to which these genera belong is a very difficult, complex group whose genera are very difficult to define. We have separated them in the key by the use of the following simple characters in order to retain most of the generic names as valid until a more detailed study of the group can be undertaken. Two of the genera in this group have the hypopygium extending past the apex of the last tergite, i.e. *Coccidoctonus* and *Epiblatticida*, whilst in the others it does not extend past the apex of the last tergite. These two genera can be separated from each other by the characters given in the key. Two of the remaining genera have the hypopygium more or less reaching the apex of the gaster, one has the postmarginal vein of the forewing longer than the stigmal (*Rhopalencyrtoidea*), whilst in the other it is not longer than the stigmal (*Teleterebratus*). The remaining genera, *Bachiana* and *Syrphophagus*, have the hypopygium not reaching further than four-fifths along the gaster. *Bachiana* has the clava two-segmented (or possibly entire) whilst that of *Syrphophagus* is always three-segmented.

**COCCIDOXENOIDES** Girault

(Key couplet: 503. Fig. 242)

*Coccidoxenoides* Girault, 1915a: 173. Type-species: *Coccidoxenoides perminutus* Girault, by original designation.

*Pauridia* Timberlake, 1919b: 206. Type-species: *Pauridia peregrina* Timberlake, by original designation. **Syn. n.**

**DISTRIBUTION AND SPECIES.** Two species, New World, Afrotropical, Oriental, Australasian and Pacific; both found in review area and possibly synonymous: *peregrinus* (Timberlake, 1919b: 208) (**comb. n.** from *Pauridia*) (Pakistan, India, Java, Philippines, Hawaiian Is.) and *perminutus* Girault (1915a: 173) (= *Fulgoridicida babindae* Girault, 1922a: 47 **syn. n.**) (Australia), also material from the Cook Is. and New Caledonia (BMNH, BPBM, DSIR).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** The holotype of *Coccidoxenoides perminutus* has been examined (QM). It is congeneric with and possibly conspecific with *Pauridia peregrina*. Although *Pauridia* is a fairly well-known name we prefer to follow the rules of zoological nomenclature and use the older name, *Coccidoxenoides*, for the genus. We therefore do not think that it is necessary to apply to the International Commission for Zoological Nomenclature to ask for suppression of *Coccidoxenoides* in favour of *Pauridia*.

The genus is placed in the Pauridiini (Tetracneminae).

**COELASPIDIA** Timberlake

(Key couplet: 75)

*Coelaspida* Timberlake, 1923: 326. Type-species: *Coelaspida osborni* Timberlake, by original designation.

**DISTRIBUTION AND SPECIES.** One described species, Neotropics and Hawaiian Is.: *osborni* Timberlake (1923: 330).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** Placed in the tribe Acroaspidiini (Tetracneminae).

**COELOPENECYRTUS** Timberlake

(Key couplets: 176, 218, 497, 508. Figs 100, 118, 119, 247, 248, 300, 301)

*Coelopencyrtus* Timberlake, 1919b: 218. Type-species: *Coelopencyrtus odyneri* Timberlake, by original designation.

*Nesencyrtus* Timberlake, 1919b: 223. Type-species: *Adelencyrtus kaalae* Ashmead, by original designation.

*Epaenasomyia* Girault, 1919b: 53. Type-species: *Epaenasomyia pallidiceps* Girault, by original designation. [Homonym of *Epaenasomyia* Girault, 1917.] **Syn. n.**

*Giraultella* Gahan & Fagan, 1923: 66. [Replacement name for *Epaenasomyia* Girault, 1919.] **Syn. n.**

*Batrachencyrtus* Jansson, 1957: 71. Type-species: *Batrachencyrtus calidii* Jansson, by monotypy.

*Lymanera* Szelenyi, 1972a: 125. Type-species: *Lymanera crassicornis* Szelenyi, by original designation. **Syn. n.**

**DISTRIBUTION AND SPECIES.** Twenty-five species, cosmopolitan; 10 species from review area: *asperithorax* (Rayment, 1949: 253) (**comb. n.** from *Aphycus*) (Australia), *kaalae* (Ashmead; Timberlake, 1922a: 139) (Hawaiian Is.), *krishnamurtii* (Mahdihassan, 1957: 182) (**comb. n.** from *Giraultella*) (India), *mauiensis* Timberlake (1922a: 137) (Hawaiian Is.), *odyneri* Timberlake (1919b: 221) (Hawaiian Is.), *orbi* Timberlake (1920: 422) (Hawaiian Is.), *pallidiceps* (Girault, 1919b: 53) (**comb. n.** from *Epaenasomyia*) (Java), *sexramosus* (Timberlake, 1922a: 141) (Hawaiian Is.), *swezeyi* Timberlake (1919b: 222) (Hawaiian Is.) and *xylocopae* (Girault,

1919b: 54) (**comb. n.** from *Epaenasomyia*) (Java), also further undetermined material from India to Papua New Guinea (BMNH, BPBM, RMNH).

REFERENCE. Review of Hawaiian species: Timberlake (1922a: 135–142).

BIOLOGY. Polyembryonic parasites of larvae of Xylocopidae, Apidae and Hylaeidae (Hymenoptera).

COMMENTS. The syntypes of *Epaenasomyia pallidiceps* in the Queensland Museum have been examined. They are morphologically very close to species of *Coelopencyrtus* (although differing in colour) and therefore we propose that the two genera be considered synonymous.

The holotype of *Lymanera crassicornis* has been examined (HNHM) and is a typical species of *Coelopencyrtus*.

There are several specimens determined as *Giraultella krishnamurthi* in the collections of the USNM. They are almost certainly syntypes and belong to the genus *Coelopencyrtus*.

*Zarhopaloides cinctithorax* (Girault, 1939a: 20) and *Anagyrus saintpierrei* Girault (1913e: 112) may both be aberrant species belonging in this genus.

The genus is placed in the tribe Copidosomatini, subtribe Coelopencyrtina (Encyrtinae) by Trjapitzin (1973b).

### COMPERIA Gomes

(Key couplet: 132)

*Comperia* Gomes, 1942: 41. Type-species: *Dicarnosis merceti* Compere, by original designation.

DISTRIBUTION AND SPECIES. Seven species, New World, Afrotropical; one species found in review area: *merceti* (Compere, 1938: 317) (India, Hawaiian Is.), also some undetermined material of at least one further species from Samoa and Australia (BMNH, BPBM).

BIOLOGY. Parasites of cockroach oothecae (Orthoptera, Blattodea).

COMMENTS. Placed in the tribe Comperiini by Trjapitzin (1973b), but possibly should be considered as a subtribe of the Microteriyini.

### COMPERIELLA Howard

(Key couplet: 105. Figs 302, 303)

*Comperiella* Howard, 1906: 121. Type-species: *Comperiella bifasciata* Howard, by monotypy.

*Pseudanusia* Girault, 1915a: 155. Type-species: *Pseudanusia pia* Girault, by original designation.

*Habrolepistia* Mercet, 1921: 668. Type-species: *Habrolepistia cerapterocera* Mercet, by original designation.

DISTRIBUTION AND SPECIES. Eight species, cosmopolitan; six from review area: *aspidiotiphaga* Subba Rao (1966: 137) (Pakistan, India), *bifasciata* Howard (= *cerapterocera* Mercet, 1921: 669) (Pakistan, China, Hawaiian Is.), *indica* Ayyar (1934: 219) (India), *lemniscata* Compere & Annecke (1961: 32) (Pakistan, India, Hong Kong), *pia* (Girault; Sands & Snowball, 1980: 41) (Australia) and *unifasciata* Ishii; Compere (1926: 49) (India).

REFERENCE. Review of species: Hayat (1977: 249).

BIOLOGY. Parasites of Diaspididae (Homoptera).

COMMENTS. Placed in the tribe Habrolepidini, subtribe Comperiellina (Encyrtinae).

### CONCHYNILLA Girault

(Key couplet: 252)

*Conchynilla* Girault, 1923c: 148. Type-species: *Conchynilla fuscipennis* Girault, by monotypy.

DISTRIBUTION AND SPECIES. One species, Australia only: *fuscipennis* Girault (1923c: 148).

## BIOLOGY. Unknown.

COMMENTS. Girault states in his unpublished manuscript (QM), under *Cerchysiella fuscipennis*, that the spelling of the generic name *Conchynilla* is incorrect and that it should have been published as *Cerchysiella*. Thus when stating 'As genotype but . . .', he must have actually been referring to *Cerchysiella nigra* (which he had designated as type-species of the genus). However, Article 32a(ii) of the *International Code of Zoological Nomenclature* states that if there is no clear evidence of mis-spelling in the original publication then the spelling must stand. In this case there is clear evidence of an error by Girault, but not that the spelling of the generic name is incorrect. Therefore, since the generic name *Conchynilla* is not unavailable for reasons of homonymy and the species epithet is valid (under Article 11g(g) of the *Code*) and *fuscipennis* does not belong to any other genus known to us, we here regard the genus and generic name as valid.

The genus is probably related to the subtribe Syrphophagina (Microteriyini), but can be distinguished from all other included genera by the distinctly infusate forewings and very long, sharply tridentate mandible.

*COPIDOSOMA* Ratzeburg

(Key couplets: 235, 250, 287, 292, 297, 325, 394, 432, 453, 484, 498, 507, 529. Figs 140, 142, 183, 204, 241, 249)

*Copidosoma* Ratzeburg, 1844: 157. Type-species: *Copidosoma boucheanum* Ratzeburg, by monotypy. *Litomastix* Thomson, 1876: 171. Type-species: *Encyrtus chalconotus* Dalman, by designation of Ashmead (1900: 363).

*Pentacnemus* Howard, 1892: 366. Type-species: *Pentacnemus bucculatricis* Howard, by monotypy. **Syn. n.**

*Parapsilophrys* Howard, 1898b: 232. Type-species: *Parapsilophrys gelechia* Howard, by monotypy.

*Berecynthus* Howard, 1898b: 237. Type-species: *Berecynthus bakeri* Howard, by monotypy.

*Pseudencyrtella* Girault, 1913e: 113. Type-species: *Pseudencyrtella fasciata* Girault, by original designation. **Syn. n.**

*Zaomencyrtus* Girault, 1915a: 107. Type-species: *Zaomencyrtus lepidopterophagus* Girault, by original designation. **Syn. n.**

*Paracaenocercus* Girault, 1915a: 116. Type-species: *Paracaenocercus perseverans* Girault, by monotypy. **Syn. n.**

*Paracopidosomopsis* Girault, 1916a: 49. Type-species: *Berecynthus floridanus* Ashmead, by original designation.

*Verdunia* Mercet, 1917b: 203. Type-species: *Verdunia gloriosa* Mercet, by original designation.

*Litomastiellus* Mercet, 1921: 443. Type-species: *Litomastix claviger* Mercet by designation of Peck in Muesebeck *et al.* (1951: 481).

*Limastotix* Mercet, 1921: 443. Type-species: *Litomastix hispanicus* Mercet, by monotypy.

*Angeliconana* Girault, 1922e: 150. Type-species: *Angeliconana eja* Girault, by monotypy. **Syn. n.**

*Parasteropaesus* Girault, 1923a: 50. Type-species: *Parasteropaesus lotae* Girault, by monotypy. **Syn. n.**

*Neocopidosoma* Ishii, 1923: 101. Type-species: *Neocopidosoma komabae* Ishii, by monotypy.

*Mesocopidosomyia* Girault, 1925b: 93. Type-species: *Mesocopidosomyia variventris* Girault, by monotypy. **Syn. n.**

*Mesencyrtus* Timberlake, 1941: 228. Type-species: *Mesencyrtus insularis* Timberlake, by original designation. **Syn. n.**

*Berecynthiscus* Ghesquière, 1946: 368. [Unnecessary replacement name for *Berecynthus* Howard.]

*Arrenoclavus* Doutt, 1948: 145. Type-species: *Copidosoma koehleri* Blanchard, by original designation.

DISTRIBUTION AND SPECIES. About 150 species, cosmopolitan; 25 species from review area: *aeripes* (Girault, 1932b: 1) (**comb. n.** from *Zaomencyrtus*) (Australia), *australia* Girault (1917g: 133) (Australia), *australicum* Girault (1917g: 133) (Australia), *australis* Girault (1917g: 133) (Australia), *compressiventris* Girault (1915a: 112) (Australia), *daccaensis* (Mani, 1941: 28) (**comb. n.** from *Litomastix*) (Bangladesh), *desantisi* Annecke & Mynhardt (1974: 32) (Australia), *fasciatum* (Girault, 1913e: 113) (**comb. n.** from *Pseudencyrtella*) (Australia), *insularis* (Timberlake, 1941: 230) (**comb. n.** from *Mesencyrtus*) (Marquesas Is.), *javae* (Girault, 1917a: 5)

(**comb. n.** from *Paracopidosomopsis*) (India, Java), *javensis* (Girault, 1919b: 56) (**comb. n.** from *Copidosomopsis*) (Java), *koehleri* Blanchard; Annecke & Mynhardt (1974: 32) (India), *lepidopterophagus* (Girault, 1915a: 107) (**comb. n.** from *Zaomencyrtus*) (Australia), *longiartus* (Girault, 1932a: 1) (**comb. n.** from *Liothorax*) (Australia), *lotae* (Girault, 1923a: 50) (**comb. n.** from *Parasteropaues*) (Australia), *lucetius* (Walker, 1839: 36) (**comb. n.** from *Encyrtus*) (Australia), *maculatum* (Ishii; Tachikawa, 1963: 199) (Australia, New Zealand), *manilae* (Ashmead, 1904a: 14) (**comb. n.** from *Coccidencyrtus*) (Philippines), *parkeri* (Girault, 1932a: 2) (**comb. n.** from *Helegonatopus*) (Australia), *perseverans* (Girault, 1915a: 116) (**comb. n.** from *Paracaenocercus*) (= *Angeliconana eja* Girault, 1922e: 150 **syn. n.**) (Australia), *salacon* (Walker, 1839: 37) (**comb. n.** from *Encyrtus*) (Australia), *shakespearei* Girault (1923d: 2) (Australia), *truncatellum* (Dalman; = *aestivalis* Mercet, 1921: 447) (Hawaiian Is.), *variventris* (Girault, 1925b: 94) (**comb. n.** from *Mesocopidosomyia*) (Australia) and *walshi* (Mercet, 1922a: 154) (**comb. n.** from *Litomastix*) (Java), also much undetermined material from throughout the region, probably containing many undescribed species (BMNH, BPBM, QM, ANIC, CNC, UCNM, HC, GC).

**BIOLOGY.** Polyembryonic parasites of larvae of Lepidoptera.

**COMMENTS.** The single extant male syntype of *Encyrtus salacon* Walker (BMNH) is here designated LECTOTYPE.

There are two male syntypes of *Encyrtus lucetius* Walker in the BMNH. One of them is here designated LECTOTYPE and has been labelled as such.

There has been much discussion concerning the maintaining of *Copidosoma* and *Litomastix* as two separate genera. The majority of workers in North America have taken the view that they should be considered synonymous, but most workers in Europe have regarded them as distinct. Certainly the type-species of the respective genera are very different and in some regions of the world (e.g. Europe) the genera can be separated easily and with confidence. However, it has been our experience, whilst examining material from throughout the world, that the two genera are impossible to separate. The usual combination of characters for separating them (obliquely truncate solid clava, hypopygium not extending to the apex of the gaster for *Litomastix* and apically rounded or transversely truncate solid or three-segmented clava, hypopygium extending to the apex of the gaster for *Copidosoma*) are not at all reliable. Even by using other characters, e.g. whether the ovipositor is exerted, relative length of marginal vein of forewing, sculpture, general body shape, etc., we have not been able to separate the species into these two recognised genera with any degree of certainty. For example, a species in North America has a well-exserted ovipositor and hypopygium reaching the apex of the gaster but with all other characters typical of *Litomastix*; a species from India has the antenna typical of *Copidosoma* but the rest of the body like *Litomastix*, and so on. With this in mind we are following the majority of the North American workers in considering the two genera as synonymous. This decision is further enhanced by the fact that where their biology is known, all species are polyembryonic parasites of Lepidoptera, and all species have a characteristic square arrangement of the sensillae at the apex of the stigmal vein of the forewing and the uncus absent (Figs 142, 183). This latter character is not known to us in any other encyrtid group except some members of the tribes Dinocarsini and Anagyrini (Tetracneminae) and Rhinoencyrtini (Encyrtinae).

*Copidosoma* is placed in the tribe Copidosomatini, subtribe Copidosomatina (Encyrtinae).

### **COPIDOSOMOPSIS** Girault

(Key couplet: 69. Figs 29, 30)

*Copidosomopsis* Girault, 1915a: 94. Type-species: *Copidosomopsis perminutus* Girault, by monotypy.  
*Pseudolitomastix* Eady, 1960a: 667. Type-species: *Pseudolitomastix nacoieiae* Eady, by original designation. [Homonym of *Pseudolitomastix* Risbec, 1954.] **Syn. n.**  
*Pentalitomastix* Eady, 1960b: 173. [Replacement name for *Pseudolitomastix* Eady.] **Syn. n.**

**DISTRIBUTION AND SPECIES.** Four species, Neotropical, Palaearctic, Australasian; two from

review area: *nacoleiae* (Eady, 1960a: 667) (**comb. n.** from *Pseudolitomastix*) (India, Singapore, Malaysia, Indonesia, Papua New Guinea) and *perminutus* Girault (1915a: 94) (Australia), also undetermined material from Papua New Guinea and Australia (BMNH, AMNH).

**BIOLOGY.** Polyembryonic parasites of larvae of Pyralidae and Tortricidae (Lepidoptera).

**COMMENTS.** The holotype of *Copidosomopsis perminutus* (QM) has the body mounted on a card and the head, one forewing and antennae mounted on a slide. Girault did not mention in his original description how many segments the funicle of *Copidosomopsis* consisted of, except by inference when he compared it with *Copidosomyia*, which has a six-segmented funicle. Also in his unpublished manuscript (QM) he states that the funicle is six-segmented. However, examination of the parts on the slide reveals the following present: five funicle segments and a pedicel, four funicle segments plus clava, four funicle segments plus pedicel and scape and two funicle segments plus a clava. This adds up to 15 funicle, two pedicel, one scape and two clava segments i.e. parts of at least three antennae present. In no case is there a complete, intact funicle with six segments. It is almost certain that Girault drew up his description from the parts on this slide and assumed that the funicle was six-segmented. However, amongst material collected recently by Bouček is a specimen which agrees more or less exactly with the parts of the holotype of *perminutus*. This specimen has only five funicle segments. Since the biology of *perminutus* is the same as *nacoleiae* (both species have been reared from pyralid larvae), we feel certain that the funicle of this species is only five-segmented and that Girault was erroneous in believing it to be six-segmented. The wing venation, hypopygium and other morphological characters of *perminutus* are very much the same as those of *nacoleiae*, therefore we have no hesitation in synonymising *Pentalitomastix* with *Copidosomopsis*. Thus the following extra-limital species are also transferred to *Copidosomopsis* from *Pentalitomastix*: *arenicola* Trjapitzin, *bohemicus* Hoffer and *plethoricus* Caltagirone (all **comb. n.**).

The genus is very near to *Copidosoma* (tribe Copidosomatini, subtribe Copidosomatina) and can be separated from it by having a five-segmented funicle. It is also very close to *Raffaellia*, from which it can be separated using the characters given in the key.

### **COPIDOSOMYIA** Girault

(Key couplet: 355. Fig. 193)

*Copidosomyia* Girault, 1915a: 99. Type-species: *Copidosomyia cinctiventris* Girault, by original designation.

*Acridencyrtus* Subba Rao, 1979: 144. Type-species: *Acridencyrtus ambiguous* Subba Rao, by original designation. **Syn. n.**

*Neochrysopophilus* Tachikawa, 1979b: 175. Type-species: *Neochrysopophilus bhimolpornae* Tachikawa, by original designation. **Syn. n.**

**DISTRIBUTION AND SPECIES.** Three species, Oriental and Australasian: *ambiguous* (Subba Rao, 1979: 145) (**comb. n.** from *Acridencyrtus*) (India, Bangladesh), *bhimolpornae* (Tachikawa, 1979b: 174) (**comb. n.** from *Neochrysopophilus*) (Thailand) and *cinctiventris* Girault (1915a: 99) (Australia), also undetermined material from Hong Kong (BPBM).

**BIOLOGY.** Parasites of Chrysopidae (Neuroptera). Records of this genus having been reared from Pseudococcidae (Homoptera) are probably erroneous.

**COMMENTS.** The genus is very close to *Homalotylus* (tribe Homalotylini, subtribe Homalotyliina) but can be separated by the remarkable shape of the head (see Tachikawa, 1979b) and lack of notaular lines on the mesoscutum.

### **COWPERIA** Girault

(Key couplets: 352, 421. Fig. 191)

*Cowperia* Girault, v. 1919a: 167. Type-species: *Cowperia punctata* Girault, by monotypy.

*Aminellus* Masi, ix. 1919: 286. Type-species: *Aminellus niger* Masi, by monotypy. **Syn. n.**

**DISTRIBUTION AND SPECIES.** Four species, Palaearctic, Oriental, Australasian; three from review area: *indica* (Kerrich, 1963: 362) (**comb. n.** from *Aminellus*) (India, Sri Lanka), *punctata* Girault (1919a: 167) (Singapore) and *sumatraensis* (Kerrich, 1963: 363) (**comb. n.** from *Aminellus*), also further undetermined material, including at least one undescribed species, from India and Sri Lanka to Borneo (BMNH, BPBM, UCR, USNM).

**REFERENCE.** Revision: Kerrich (1963).

**BIOLOGY.** Parasites of coccinellid (Coleoptera) larvae which are predaceous on Pseudococcidae (Homoptera).

**COMMENTS.** The single extant syntype female of *Cowperia punctata* Girault is here designated **LECTOTYPE** (BMNH). It is very close to *Cowperia indica* but differs in having a slightly flatter scutellum which is more conspicuously carinate laterally and relatively more transverse funicle segments.

Placed in the tribe Bothriothoracini, subtribe Aminellina by Trjapitzin (1973b). It can be separated from the other included genus, *Amicencyrtus*, by the more distinctly convex scutellum (see also Hayat, 1981b: 17).

### **CREMESINA gen. n.**

(Key couplets: 83, 147. Figs 35, 36, 80, 304, 313)

Type-species: *Cremesina aquilonaris* sp. n. Gender: feminine.

♀. *Head.* In facial view a little broader than long and in profile about twice as long as broad and anteriorly more or less gradually and evenly curved. Eye with posterior margin straight, about two-thirds longer than broad and with numerous short setae and reaching or nearly reaching occipital margin which is sharp. Malar space about one-third length of eye, with sulcus absent or present. Frontoververtex slightly less than half head width; ocelli forming a slightly acute to slightly obtuse angle, posterior ocellus separated from occipital margin by a little less than its own major diameter and from eye margin by about its own major diameter. Antennal scrobes shallow, not meeting dorsally and reaching about half way from antennal toruli to anterior ocellus; antennal torulus separated from mouth margin by about half its length and from other torulus by about its own length, its dorsal margin about level with ventral eye margin; clypeal margin broadly excised between toruli. Antennal scape broadened and flattened about two to two and one-half times as long as broad and a little longer than minimum width of frontoververtex, pedicel conical, a little longer than any of the funicle segments (except perhaps the first) which are cylindrical and all clearly longer than broad, the first a little longer and narrower than the sixth, funicle six-segmented; clava three-segmented, a little less than half as long as funicle and with apex more or less rounded, the sutures more or less parallel, the outer suture slightly oblique; longitudinal sensillae on all flagellar segments. Frontoververtex with very fine, transversely rugose sculpture of silky appearance and clothed with fairly dense short white setae. Mandible narrow with two apical teeth, maxillary palpus four-segmented, labial palpus probably two- or possibly three-segmented.

*Thorax.* In side view moderately deep with metapleurum and propodeum broadly in contact with hind coxa, dorsally with mesoscutum and scutellum flat. In dorsal view (Fig. 35) pronotum with posterior margin slightly concave; visible part of mesoscutum a little more than twice as broad as long with notaular lines absent; axillae meeting, scutellum a little broader than long and about as long as to one-third longer than mesoscutum and with apex acute; propodeum medially not more than about one-tenth as long as scutellum. Dorsum of thorax with similar sculpture to frontoververtex, silky in appearance and covered with numerous short, appressed setae. Macropterous species (Fig. 80) with forewing centrally strongly infusate, occasionally with only the basal and apical quarters hyaline, wing a little over two and one-half times as long as broad, linea calva interrupted just below middle and closed near posterior margin of wing, filum spinosum present, submarginal vein with an apical hyaline break, marginal vein about three times as long as broad, clearly longer than the short postmarginal and about as long as the stigmal; costal cell about 20 times as long as broad and with a single line of setae dorsally in distal half. Hindwing hyaline and about three-quarters as long as forewing and a little over four times as long as broad, with marginal fringe about one-quarter as long as maximum wing width. Brachypterous species (Fig. 304) with forewing reaching about half way along gaster, the apex truncate, about four times as long as broad, venation nearly reaching apex, linea calva absent; hindwing about two-thirds length of forewing, about eight times as long as broad,

gradually tapering towards apex and with venation reaching apex. Mid tibial spur nearly as long as basal mid tarsal segment.

*Gaster*. Slightly longer than thorax, cercal plates in anterior half, paratergites present, last tergite a little longer to one-half longer than mid tibia, hypopygium reaching apex of gaster, ovipositor not exerted and about one-quarter to one-third longer than mid tibia, gonostyli fused to second valvifers and about one-fifth to one-sixth length of ovipositor.

♂. Differs from female as follows. Eye a little smaller, about one-half longer than broad and a little separated from occipital margin; malar space about two-fifths to one-half length of eye; malar sulcus present. Frontoververtex a little more than half head width; posterior ocellus separated from eye margin by about its own major diameter to much more than its own major diameter, antennal scrobes more or less meeting dorsally; antennal torulus separated from mouth margin by a little less than its own length and from other torulus by less than to about its own length, its ventral margin only a little below or about level with ventral margin of eye; antennal scape stout, about four times as long as broad and about one-third shorter than minimum width of frontoververtex, pedicel conical, subquadrate, a little longer than broad and clearly shorter than any funicle segments which are all longer than broad, setae on flagellum at least about twice as long as maximum diameter of segments, longitudinal sensillae on all flagellar segments, scale-like sensillae on sixth funicle segment and base of clava. Forewing entirely hyaline and about two and one-half times as long as broad, filum spinosum absent; hindwing about five times as long as broad. Gaster about as long as thorax; genitalia with digiti about one-tenth to one-twentieth as long as aedeagus and without hooks, aedeagus about one-half as long as mid tibia or twice as long as mid tibial spur.

COMMENTS. The genus belongs to the Anagyrini, subtribe Anagyrina (Tetracneminae) and is probably closest to *Anagyrus*. It can be separated from this genus by the pattern of infuscation of the forewing and the presence of the filum spinosum in the fully winged species. The latter is apparently very rare in the Tetracneminae.

***Cremesina aquilonaris* sp. n.**

(Figs 305–313)

♀. Length: 1.02–1.59 mm (holotype, 1.44 mm).

*Colour*. Head and thorax generally reddish; antenna with radicle dark brown, scape dark brown and on outer face with a short white stripe along its ventral margin to about one-quarter along margin, dorsal margin white, apical quarter white with extreme apex dark brown, inner face similar but white stripe along dorsal margin wider and brown areas in centre often pale yellowish-brown; pedicel with basal half dark brown and apical half white, funicle segments two to five white, other flagellar segments dark brown (Fig. 306), occasionally fifth funicle segment also dark brown or segments two to five pale dusky brownish white; tegula white with apex dark brown; occasionally posterior margin of propodeum laterally dark; gaster completely reddish as in thorax but usually mixed with dark brownish to a lesser or greater extent; legs including fore and mid coxae yellowish white, hind coxa usually reddish mixed with brownish, all femora occasionally slightly dusky as well as fore tibia and bases of mid and hind tibiae outwardly, foretarsus testaceous yellow, mid and hind pretarsi dark brown; forewing infusate (as in Fig. 80) except for a distinct hyaline break immediately distal to infusate area.

*Head*. Setae on eyes generally dark and conspicuous, particularly in larger specimens, in smaller specimens they may be pale, short and inconspicuous; malar sulcus absent; ocelli forming a distinctly obtuse angle; antennal toruli separated from each other by very slightly more than their own lengths. Relative measurements (holotype): head width (facial view) 74, head length 65, minimum frontoververtex width 32, malar space 13, eye length 51, eye width 30, POL 16, OOL 6, scape length 35, other proportions of antenna as in Fig. 306.

*Thorax*. Scutellum a little longer to nearly one-third longer than mesoscutum, forewing fully developed. Relative measurements of forewing (holotype): length 68, width 27, other proportions as in Fig. 305; of hindwing: length 50, width 12. Sculpture of mesoscutum Fig. 307.

*Gaster*. Relative lengths (paratype): ovipositor 52, gonostylus approx. 9, last tergite 47, [mid tibia 38]. Ovipositor as in Fig. 308, hypopygium as in Fig. 309.

♂. Length: 0.67–1.05 mm.

Differs from female as follows. *Colour*. Head, thorax and gaster generally dark brown and orange or yellowish orange along margins of eyes and face below top of antennal scrobes, slightly dusky on interantennal prominence and dark brown on lower part of gena near base of mandible; legs and tegula

more or less as for female except hind coxa almost totally dark brown; sides of thorax mixed with orange, particularly around perimeter of mesopleurum; antenna with scape dusky white basally, with a broad dark brown median band and apical one-third or so more or less yellowish brown, pedicel and flagellum yellowish with base of pedicel darker mixed with brown.

*Head.* Setae on eyes generally less conspicuous than in female; ventral margin of antennal torulus slightly below lower eye margin, toruli separated by about their own lengths, scale-like sensillae present on clava. Relative measurements (paratype): head width (facial view) 60, head length 53, minimum frontovertex width 33, malar space 13, eye length 33, eye width 22, POL 15, OOL 7, scape length 26, proportions of antenna as in Fig. 310.

*Thorax.* Base of forewing and venation as in Fig. 313.

*Gaster.* Relative lengths (paratype): acedeagus 48, [mid tibial spur 19]; genitalia as in Figs 311, 312.

**DISTRIBUTION.** India.

**BIOLOGY.** Unknown.

#### MATERIAL EXAMINED

Holotype ♀, **India:** Uttar Pradesh, Aligarh, 8–10.xi.1979 (J. S. Noyes) (BMNH).

Paratypes. **India:** 11 ♀, 7 ♂, same date as holotype; 1 ♀, Uttar Pradesh, Aligarh, 24.i.1978 (M. Hayat); 1 ♀, Uttar Pradesh, Aligarh, 10.x.1979 (M. Verma); 1 ♀, Uttar Pradesh, Aligarh, 13.xii.1979 (M. Hayat & M. Verma); 1 ♀, Uttar Pradesh, Aligarh, 10.viii.1980 (M. Hayat); 1 ♀, Uttar Pradesh, Aligarh, 8.iii.1981 (M. Hayat); 21 ♀, 1 ♂, Delhi, IARI area, x.1979 (Z. Bouček); 11 ♀, 10 ♂, Uttar Pradesh, Dehra Dun, x.1979 (Z. Bouček) (BMNH, HC, USNM, UCR, ZI, PPRI).

**COMMENTS.** A further three species from India and one from Cook Is., the latter species differing in having brachypterous hyaline forewings. The species can be separated in the female by general coloration, the relative distance between the antennal toruli, the relative lengths of the funicle segments, the relative width of the frontovertex, the angle formed by the ocelli, the presence or absence of a malar sulcus, the extent of the infuscation and the relative lengths of the forewings and the relative length of the scutellum to the mesoscutum; in the male they can be separated by the relative distance that separates the antennal toruli, their position in relation to the lower eye margin, the relative width of the frontovertex; the presence or absence of scale-like sensillae on the clava and the relative length of the digiti of the genitalia.

### CRYPTANUSIA Girault

(Key couplet: 119)

*Cryptanusia* Girault, 1917f: 14. Type-species: *Cryptanusia albiclava* Girault, by original designation.

*Anusoidea* Girault, 1926c: 128. Type-species: *Anusoidea aureiscutellum* Girault, by monotypy.

**DISTRIBUTION AND SPECIES.** Seven species, all Australasian: *albiclava* Girault; Gordh & Trjapitzin (1981: 15) (Java), *aureiscutellum* (Girault, 1926c: 128) (Australia), *comperei* (Timberlake, 1929: 11) (Australia), *gigantea* (Girault, 1917g: 138) (**comb. n.** from *Xenanusia*) (Australia), *luzonica* (Gordh, 1974: 203) (Philippines), *phoonae* (Tachikawa, 1968: 117) (Singapore) and *varia* (Girault, 1927b: 310) (Australia).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** It is quite possible that *aureiscutellum*, *comperei*, *gigantea* and *varia* are synonymous since they differ only in colour and slightly in the arrangement of the setae proximal to the linea calva. A series of specimens recently collected in Australia (BMNH) exhibits a large degree of variation in these characters.

The genus is placed in the tribe Anagyrini, subtribe Anusiina (Tetracneminae) by Gordh & Trjapitzin (1981: 17). In our view the group to which this genus belongs (including *Cyrtocoryphes*, *Parectromoidella*, *Epanusia* and *Xenanusia*) might be better placed within the Dinocarsini (or Dinocarsina if it is regarded as a subtribe of the Anagyrini). *Cryptanusia* can be separated from related genera (see above) by the characters given in the key.

**CYRTOCORYPHES** Timberlake

(Key couplet: 227. Figs 133, 316)

*Cyrtocoryphes* Timberlake, 1926: 5. Type-species: *Cyrtocoryphes viridiceps* Timberlake, by monotypy.DISTRIBUTION AND SPECIES. One species, Fiji only: *viridiceps* Timberlake (1926: 8).

BIOLOGY. Unknown.

COMMENTS. The genus is close to *Parectromoidella* (see also comments under *Cryptanusia*) from which it can be separated by the characters given in the key.**DIAPHORENCYRTUS** Hayat

(Key couplets: 313, 443, 526)

*Diaphorencyrtus* Hayat, 1981a: 18. Type-species: *Aphidencyrtus aligarhensis* Shafee, Alam & Agarwal, by original designation.DISTRIBUTION AND SPECIES. Three species, all Oriental and possibly synonymous: *aligarhensis* (Shafee, Alam & Agarwal, 1975: 91) (India), *diaphorinae* (Lin & Tao, 1979: 117) (**comb. n.** from *Psyllaephagus*) (Taiwan) and *diaphorinae* (Myartseva & Trjapitzin, 1978: 793) (**comb. n.** from *Aphidencyrtus*) (Vietnam), also one undescribed species from Hong Kong (BMNH).

BIOLOGY. Parasites of nymphs of Psyllidae (Homoptera).

COMMENTS. The genus is most probably best placed in the tribe Microteriyini, subtribe Syrphophagina (Encyrtinae) and can be separated from related genera (see comments under *Coccidoctonus*) by the characters given in the key.**DIASULA** gen. n.

(Key couplet: 343. Figs 158, 314, 315)

Type-species: *Liothorax glabriscutellum* Girault. Gender: feminine.

♀. *Head*. In frontal view slightly wider than long and in side view a little less than twice as long as broad and more or less gradually and evenly curved anteriorly but a little more strongly so above top of antennal scrobes. Eye almost naked, with sparse, very inconspicuous pale setae, each clearly shorter than the diameter of a facet; posterior margin of eye very slightly concave, eye about one-third longer than broad and reaching occipital margin which is sharply carinate, particularly behind ocelli. Malar space slightly longer than one-third length of eye, with sulcus present; mouth opening relatively broad, about two-thirds as wide as head. Frontovertex about one-third head width; ocelli more or less forming a right angle, relatively large, the posterior ones very close to eye margin but separated from occipital margin by about one and one-half times their own major diameters. Antennal scrobes fairly shallow and short, only about as long as toruli, meeting dorsally, reaching to about one-third way from toruli to anterior ocellus; antennal torulus separated from mouth margin by about its own length and from other torulus by slightly less than its own length, its dorsal margin about half its length above ventral level of eyes; clypeus broadly but shallowly concave, naked along mouth margin. Antennal scape clearly longer than width of frontovertex, subcylindrical, about five to six times as long as broad; pedicel conical, about two-fifths length of scape, subequal in length or a little longer than any of the funicle segments, all of which are cylindrical and at least slightly longer than broad; clava three-segmented, apically rounded with sutures parallel and about twice as long as any funicle segment and not or hardly broader; longitudinal sensillae on all flagellar segments; longest setae a little longer than diameter of segments. Frontovertex fairly smooth and polished behind ocelli; between ocelli with very shallow, raised, reticulate sculpture, below this with very shallow, raised, transverse, squamiform-reticulate sculpture, this becoming more longitudinally elongate between scrobes and eyes and on lower parts of face; setae on head sparse, dark and not very conspicuous although each a little longer than the diameter of an ocellus. Mandible broad with three acute teeth; maxillary palpus four-segmented; labial palpus three-segmented.

*Thorax*. In side view fairly deep with mesoscutum only a little convex, but scutellum fairly strongly so; metapleurum together with propodeum only narrowly in contact with hind coxa. Pronotum in dorsal view

more or less triangular with its posterior margin slightly concave; visible part of mesoscutum about one and one-half times as broad as long, with posterior margin slightly convex, notaular lines absent; axillae meeting; scutellum very convex, clearly longer than broad with its apex narrow and rounded; propodeum medially quite long, but not more than one-sixth as long as scutellum. Mesoscutum and scutellum with very shallow, raised, squamiform-reticulate sculpture, sculpture of axillae similar but finer, anterior one-third or so of scutellum with similar sculpture to mesoscutum but shallower, gradually becoming more shallow posteriorly so that apical half of scutellum is almost completely smooth and polished; mesopleurum smooth; propodeum smooth save for a very shallow incomplete carina medially; mesoscutum with a few scattered, fairly long, dark setae; scutellum with about two dozen long conspicuous setae including two pairs of long erect setae subapically. Forewing hyaline, about two and one-half times as long as broad; linea calva neither interrupted nor closed; basal cell sparsely hairy; filum spinosum present; submarginal vein with an apical hyaline break, parastigma not swollen; costal cell about 12 to 13 times as long as broad, with only a few setae dorsally in its apical half or so; marginal vein about four to five times as long as broad, about one and one-half times as long as stigmal which is subequal in length to postmarginal vein; venation yellowish. Hindwing hyaline, about three-quarters as long as broad, with marginal fringe about one-seventh as long as width of hindwing. Mid tibial spur about as long as basal mid tarsal segment.

*Gaster*. Clearly longer than thorax and apically acute; cercal plates in basal one-third; ovipositor a little exerted, exerted part less than one-tenth length of gaster; hypopygium reaching from about one-third to nearly three-quarters along gaster; last tergite about as long as mid tibia.

♂. Unknown.

COMMENTS. *Diasula* is possibly related to *Helegonatopus* (Encyrtinae, Chalceryini) since the mandible has three acute teeth, the scutellum is convex and the wing venation is yellow. However, it can be easily separated from this and related genera by the very sharp occipital margin, long marginal vein and very shiny scutellum.

*Diasula glabriscutellum* (Girault) comb. n.

(Figs 158, 314, 315)

*Liothorax glabriscutellum* Girault, 1932a: 1. LECTOTYPE ♀, AUSTRALIA (QM), here designated [examined].

♀. Length: 2.08–2.22 mm.

*Colour*. Head and thorax metallic green with some purple reflections, particularly between ocelli and occipital margin and on lower parts of face, sides of thorax orange-brown to dark purplish brown; antennal pedicel and flagellum dark brown, scape, palpi and legs, excluding mid coxae, pale yellow, mid coxa dark brown; wings hyaline, venation yellow; gaster towards base ventrally metallic green, remainder of dorsum shining purple, ovipositor sheaths dark brown.

*Head*. Relative measurements (Australian specimen): head length 84, head width (frontal view) 89, head width (side view) 51, minimum frontovertex width 31, POL 14, OOL 1.5, malar space 21, eye length 59, eye width 45, scape length 47, other proportions of antenna as in Fig. 315, mandible as in Fig. 314.

*Thorax*. Base of forewing as in Fig. 158. Relative measurements (Australian specimen): forewing length 278, forewing width 108, hindwing length 198, hindwing width 53.

*Gaster*. Hypopygium reaching about three-quarters along gaster. Relative lengths (Australian specimen): last tergite 110, [mid tibia 111].

♂. Unknown

DISTRIBUTION. Australia, Philippines.

BIOLOGY. Unknown.

MATERIAL EXAMINED

Lectotype ♀, **Australia**: Queensland, Nelson (A. P. Dodd).

**Australia**: 1 ♀, Queensland, 15 km SE. of Nambour, 6.xi.1976 (Z. Bouček) (compared with lectotype) (BMNH). **Philippines**, 1 ♀, Mt Montalban, Rizal Wa-Wa Dam, 150–200 m, 23.iii.1965 (L. M. Torrevillas) (BPBM).

COMMENTS. The single extant syntype of *Liothorax glabriscutellum* Girault (1932a: 1) in the Queensland Museum has the body mounted on a card and labelled '*Liothorax glabri-*

*scutellum* Gir. ♀ type'; the head and right forewing are on a separate slide labelled '*Liothorax glabriscutellum* Girault ♀ Type'. It is here designated lectotype. The Australian specimen was compared with the lectotype by one of us (JSN) during a visit to Brisbane in 1980.

Two other species are provisionally placed in this genus: *Diasula semiargentipes* (Girault, 1915a: 105) (comb. n. from *Parasyrphophagus*) (Australia) and *Diasula homeri* (Girault, 1935: 3) (comb. b. from *Parasyrphophagus*) (Australia), and should run here in the key.

### **DIVERSINERVUS** Silverstri

(Key couplets: 87, 98)

*Diversinervus* Silverstri, 1915a: 301. Type-species: *Diversinervus elegans* Silverstri, by original designation. *Cheiloneuroides* Girault, 1915a: 96. Type-species: *Cheiloneuroides bicristatus* Girault, by original designation.

DISTRIBUTION AND SPECIES. Eleven species, cosmopolitan; five from review area: *cervantesi* (Girault, 1933: 4) (Australia, Malaysia, Samoa), *elegans* Silverstri (1915a: 304) (India, Australia, Fiji, Hawaiian Is.), *intermedius* Hayat, Alam & Agarwal (1975: 43) (India), *madgaensis* Hayat, Alam & Agarwal (1975: 41) (India) and *paradisicus* (Motschulsky, 1863: 52) (Sri Lanka), also undetermined material from New Caledonia (BPBM).

REFERENCE. Key to world species: Hayat *et al.* (1975: 39–41); Rosen & Alon (1983).

BIOLOGY. Parasites of Coccidae (Homoptera).

COMMENTS. The only species not included in the key by Hayat *et al.* is *cervantesi* but this has been included by Rosen & Alon. It can be easily recognised since it is the only brachypterous species known in the genus.

The genus is placed in the tribe Cheiloneurini (Encyrtinae) by Trjapitzin (1973b), but the forewing venation suggests a strong link with some genera of the Cerapterocerini, e.g. *Anicetus*.

### **DODDANUSIA** gen. n.

(Key couplet: 131. Figs 66, 317–321)

Type-species: *Anusia viridiflava* Dodd. Gender: feminine

♀. *Head*. In facial view nearly one-third broader than long, in side view a little less than twice as long as broad and more or less evenly curved anteriorly except below top of antennal scrobes where it is almost straight. Eye with fairly conspicuous translucent setae, each a little longer than the diameter of a facet, posterior margin of eye straight, eye only very slightly longer than broad, reaching occipital margin which is rounded, but not strongly so. Malar space about one-half to three-fifths length of eye, with sulcus absent. Frontovortex less than one-quarter as wide as head; ocelli forming an acute angle of about 45–70°, the posterior ones clearly closer to eye margin than to occipital margin, separated from the latter by about their own diameters. Antennal scrobes broadly semi-circular, meeting dorsally and more or less sharply margined dorsally, reaching about one-third way from antennal toruli to anterior ocellus; antennal torulus separated from mouth margin by slightly more than its own length and from other torulus by about one and one-half times its own length, its dorsal margin clearly below the ventral level of the eyes; clypeus broadly and shallowly emarginate. Antennal scape (Fig. 318) much longer than minimum width of frontovortex and distinctly broadened and flattened, about twice as long as broad, pedicel conical, about one-quarter length of scape and clearly longer than any of the funicle segments; funicle six-segmented, cylindrical, clearly broadening distally; clava two- or three-segmented, with a strong oblique truncation, nearly as long as funicle; longitudinal sensillae on fifth and sixth funicle segments and clava; longest setae clearly shorter than diameter of first funicle segment, funicle segments and basal segment of clava with setae flattened and scale-like. Frontovortex near ocelli with shallow to fairly deep polygonal reticulate sculpture, above scrobes similar but transversely elongate or almost entirely smooth and shiny; between scrobes and eyes moderately deep, polygonally reticulate sculpture, this becoming a little shallower and more longitudinally elongate on genae; setae on frontovortex translucent or dark, about as long as the diameter of an ocellus.

Mandible with one tooth and a broad truncation (Fig. 319); maxillary palpus four-segmented, labial palpus three-segmented.

*Thorax.* In side view moderately robust but dorsally very flat; the mesopleurum enlarged and more or less touching basal segment of gaster and thus clearly separating the hind coxa from the metapleurum and propodeum. In dorsal view posterior margin of propodeum broadly and shallowly concave; visible part of mesoscutum about twice as broad as long with notaular lines absent, its posterior margin almost straight; axillae meeting; scutellum flat, triangular and slightly broader than long; propodeum medially a little less than one-fifth length of scutellum. Dorsum of thorax with shallow, raised, squamiform-reticulate sculpture, mesopleurum with raised reticulate sculpture of fine mesh medially and longer mesh posteriorly, anteriorly rather more irregular and longitudinally elongate; propodeum with shallow, raised irregular sculpture; setae on dorsum of thorax dark, sparse and of moderate length. Forewing generally suffused pale brown and convex dorsally (as in *Discodes*), about twice as long as broad; linea calva not interrupted but closed on dorsal surface by one or two lines of setae near posterior margin of wing; filum spinosum present but in posterior half of wing (Fig. 66); submarginal vein with an indistinct apical hyaline break, parastigma not swollen; costal cell about 10 or 11 times as long as broad, with one or two lines of setae dorsally along its length; marginal vein about four to five times as long as broad, about three times as long as postmarginal and a little longer than, to about same length as stigmal (Fig. 317); setae on dorsal surface of wing fairly inconspicuous and short. Hindwing slightly longer than three-quarters length of forewing, about three times as long as broad, with marginal fringe about one-sixth as long as width of wing. Mid tibial spur a little shorter than basal mid tarsal segment.

*Gaster.* A little shorter than thorax with hypopygium extending to about three-quarters along venter; ovipositor not exerted; last tergite a little shorter than mid tibia; paratergites absent; ovipositor (Fig. 321) about as long as mid tibia; gonostyli free, about one-sixth as long as ovipositor; hypopygium as in Fig. 320.

♂. Unknown.

COMMENTS. This genus should probably be placed in the Microteriyini (Encyrtinae), subtribe Microteriyina and can be separated easily from all other related genera by the strongly obliquely truncate antennal clava, scale-like setae on the flagellum, and presence of a filum spinosum in posterior half of forewing.

### *Doddanusia viridiflava* (Dodd) comb. n.

Dodd's original (1924) description is probably sufficient to recognise this species. It can be separated from a second species from the mainland of Australia: Queensland (BMNH) by having the antennal scrobes partly metallic green, the frontovertex at its narrowest point about one-fifth head width, malar space about one-half length of an eye, ocelli forming an angle of about 45° and antennal scape more clearly triangular in shape. The species from the Australian mainland has the scrobes non-metallic, frontovertex about one-quarter head width, ocelli in an angle of about 65–70°, malar space about three-fifths as long as an eye and antennal scape subrectangular in shape (Fig. 318). Figs 66, 317–321 are of this second undescribed species.

DISTRIBUTION. Australia (Queensland and Norfolk Is.).

BIOLOGY. Unknown.

### *DOLIPHOCERAS* Mercet

(Key couplets: 165, 174, 221, 277. Figs 97, 98, 175)

*Doliphoceras* Mercet, 1921: 91. Type-species: *Pholidoceras integralis* Mercet, by original designation.

*Rhopomorphus* Ghesquière, 1958: 25. Type-species: *Rhopomorphus varleyellus* Ghesquière, by original designation.

DISTRIBUTION AND SPECIES. Twelve species, Palaearctic, Afrotropical, Oriental, Australasian and Pacific; five from review area: *fraternus* (Perkins, 1910: 653) (comb. n. from *Anagyrus*) (Hawaiian Is.), *gracilis* Hayat (1970a: 114) (India), *nigricans* (Perkins, 1910: 653) (Hawaiian Is.), *punctifrons* (Timberlake, 1941: 219) (comb. n. from *Anagyrus*) (Marquesas Is.) and

*tantaleus* (Perkins, 1910: 654) (**comb. n.** from *Anagyrus*) (Hawaiian Is.), also undetermined material from Nepal, Hong Kong, Fiji and Australia (BMNH, BPBM).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** The genus is placed in the subtribe Rhopina of the tribe Anagyrini (Tetracneminae) by Trjapitzin (1973a), which is, without doubt, incorrect. *Doliphoceras* is extremely close to *Anagyrus* (subtribe Anagyrina) and very probably should be considered synonymous, but for the present we are maintaining the two genera as distinct (see comments under *Anagyrus*).

### ***ECHTHROBACCELLA* Girault**

(Key couplet: 241)

*Echthrobaccella* Girault, 1915a: 113. Type-species: *Echthrobaccella argentinotata* Girault, by original designation.

**DISTRIBUTION AND SPECIES.** One species, Australia only: *argentinotata* Girault (1915a: 113).

**BIOLOGY.** Unknown.

**COMMENTS.** Related to *Cheiloneurus* (Encyrtinae, tribe Cheiloneurini) from which it can be separated by the apparent presence of notaular lines in the extreme anterior part of the mesoscutum, dorsum of thorax with fine punctate sculpture of silky appearance and forewing having dense setae throughout basal cell, submarginal vein not bent downwards subapically, a characteristic infusate pattern, and the distinctive coloration of the thorax (see Girault, 1915a: 113).

### ***ECHTHROGONATOPUS* Perkins**

(Key couplet: 349, 455, 470, 527. Figs 192, 223, 224)

*Echthrogonatopus* Perkins, 1906: 256. Type-species: *Echthrogonatopus exitiosus* Perkins, by designation of Gahan & Fagan (1923: 48).

**DISTRIBUTION AND SPECIES.** Four species, Nearctic, Afrotropical, Oriental, Australasian; three species from review area: *exitiosus* Perkins (1906: 256) (Malaysia, Philippines, Fiji, Australia), *nigricornis* (Hayat, 1980: 644) (India) and *parvus* (Hayat, 1980: 643) (India), also undetermined material, including at least one undescribed species, from Bangladesh, Hong Kong, Philippines and Samoa (BMNH, BPBM, GC).

**BIOLOGY.** Hyperparasites of leafhoppers (Homoptera, Auchenorrhyncha) via Dryinidae (Hymenoptera).

**COMMENTS.** The genus is best placed in the tribe Cheiloneurini (Encyrtinae) and can be separated from its nearest relatives, *Zaomma*, by the lack of an apical scutellar brush (see also Hayat, 1980: 642–643), and *Hypergonatopus* by the flat dull scutellum and hyaline forewings (the scutellum of *Hypergonatopus* is convex and at least a little shiny and the forewings are darkened).

### ***ECTOPIOGNATHA* Perkins**

(Key couplet: 187. Figs 112, 322, 323)

*Ectopiognatha* Perkins, 1906: 254. Type-species: *Ectopiognatha minor* Perkins, by designation of Gahan & Fagan (1923: 49).

**DISTRIBUTION AND SPECIES.** Two species, both Australian and probably synonymous: *major* Perkins (1906: 255) and *minor* Perkins (1906: 255), also one undetermined specimen, lacking antennae, from Irian Jaya (BPBM).

**BIOLOGY.** Parasites of eggs of Flatidae and Eurybrachidae (Homoptera).

COMMENTS. Placement of the genus according to Trjapitzin's (1973) classification is difficult, but it most probably belongs in the Microteriyini.

### **ECTROMA** Westwood

(Key couplet: 93)

*Ectroma* Westwood, 1833a: 344. Type-species: *Ectroma fulvescens* Westwood, by monotypy.

*Metallon* Walker, 1848: 219. Type-species: *Metallon acacallis* Walker, by monotypy.

*Pezobius* Förster, 1860: 129. Type-species: *Pezobius polychromus* Förster, by monotypy.

DISTRIBUTION AND SPECIES. Twelve described species, Neotropical, Palaearctic, Afrotropical; none found in review area but one undescribed species from India (BMNH).

BIOLOGY. Unknown.

COMMENTS. Dalla Torre (1898: 238) lists *Ectroma dunense* Six (1876) as originating from Batavia in Asia (Indonesia), but it is not included here since this species was described from the Batavia peninsula in the Netherlands.

The mandibles of *Ectroma* are tridentate, although they were erroneously stated to be bidentate by Noyes (1980: 114).

The genus has been placed in the tribe Miraini, subtribe Mayridiina (Encyrtinae) by Trjapitzin (1973b). This is obviously incorrect since *Mira* (and thus the tribe Miraini) belongs in the Tetracneminae whereas *Ectroma* and its relatives belong in the Encyrtinae. We feel sure that *Ectroma* can be accommodated in the Cheiloneurini, and is probably close to *Cheiloneurus*. It can be difficult to separate from brachypterous forms of *Cheiloneurus*, particularly if the latter lacks the usual subapical, scutellar brush (see key).

### **ENCYRTOIDEA** Girault

(Key couplets: 248, 331, 465, 491, 512)

*Encyrtoidea* Girault, 1923c: 146. Type-species: *Encyrtoidea punctatifrons* Girault, by monotypy.

DISTRIBUTION AND SPECIES. Two species, Australia only: *compressifemur* (Girault, 1923e: 5) (comb. n. from *Nezarhopalus*) and *punctatifrons* Girault (1923c: 146), also two further species from Australia (BMNH).

BIOLOGY. Unknown.

COMMENTS. *Encyrtoidea compressifemur* may be incorrectly placed in this genus since the mandibles are very different from those of *punctatifrons*. The latter species has all three teeth very nearly equal in size, whereas in *compressifemur* the lowest tooth is very much larger than either of the two upper teeth.

The genus is very difficult to place according to Trjapitzin's (1973b) classification of the Encyrtinae. The venation and mandibles suggest an affinity with *Borrowella* (which is here provisionally placed in the Bothriothoracini), but in general appearance it is not unsimilar to some genera of the Microteriyini e.g. *Ooencyrtus* and *Syrphophagus*.

### **ENCYRTUS** Latreille

(Key couplets: 99, 373)

*Encyrtus* Latreille, 1809: 31. Type-species: *Chrysis infida* Rossi, by designation of Latreille (1810: 436).

*Eucomys* Förster, 1856: 32. Type-species: *Encyrtus swederi* Dalman, by original designation.

*Comys* Förster, 1856: 144. [Unnecessary replacement name for *Eucomys* Förster.]

*Howardia* Dalla Torre, 1897: 86. Type-species: *Bothriothorax peckhami* Ashmead, by original designation. [Homonym of *Howardia* Berlese & Leonardi, 1896.]

*Howardiella* Dalla Torre, 1898: 228. [Replacement name for *Howardia* Dalla Torre.]

*Allorhopoideus* Brèthes, 1916: 425. Type-species: *Allorhopoideus mirabilis* Brèthes, by original designation.

*Prorhopoideus* Brèthes, 1921: 80. Type-species: *Prorhopoideus baezi* Brèthes, by original designation.

**DISTRIBUTION AND SPECIES.** About 90 species currently in the genus *Encyrtus* but only about 40 are correctly placed, cosmopolitan; six species from review area: *albidus* Hayat (1970b: 61) (India), *argenticoxa* (Girault, 1915a: 129) (**comb. n.** from *Eucomys*) (= *Eucomys hibisci* Girault, 1915a: 128 **syn. n.**, = *Eucomys aurantifasciata* Girault, 1915a: 129 **syn. n.**, = *Eucomys argentiscapus* Girault, 1915a: 130 **syn. n.**) (Australia), *infelix* (Embleton, 1902: 223) (Fiji, New Zealand, Hawaiian Is.), *lecaniorum* (Mayr, 1876: 740) (India, Philippines, New Zealand, Hawaiian Is.), *proserpinensis* (Girault, 1915a: 130) (**comb. n.** from *Eucomys*) (= *Eucomys hortensis* Girault, 1915a: 130 **syn. n.**) (Australia) and *saissetiae* (Yasumatsu & Yoshimura, 1945: 33) (**comb. n.** from *Eucomys*) (Mariana Is.), also much undetermined material from throughout the region (BMNH, BPBM, DSIR, CNC, USNM).

**REFERENCE.** Review of Holarctic species: Sugonjaev & Gordh (1981); key to some species: Hayat (1970b: 59).

**BIOLOGY.** Parasites of Coccidae (Homoptera).

**COMMENTS.** We have not seen the holotype of *E. corvinus* Motschulsky (1863: 55), but according to Bouček (pers. comm.) it belongs to the subfamily Telenominae (Proctotrupoidea, Scelionidae).

Placed in the tribe Encyrtini as the sole included genus (Trjapitzin, 1973b). We feel that Trjapitzin's definition of this tribe is probably too narrow and that it should also include those genera of the tribes Eugahaniini, Prionomasticini, Neocladiini and Aethognathini. However, further more detailed study of this group is desirable before this tribal synonymy can be proposed formally.

### **EOTOPUS gen. n.**

(Key couplet: 263. Figs 150, 325–327)

Type-species: *Ericydnus beneficus* Shafee. Gender: masculine.

♀. **Head.** In facial view clearly broader than long and in profile about two-thirds longer than broad and anteriorly more or less gradually and evenly curved. Eye with posterior margin slightly concave, about one-half longer than broad, with dense fairly conspicuous translucent setae and clearly overreaching occipital margin which is more or less rounded. Malar space about one-quarter eye length, with malar sulcus present. Frontovortex about one-third head width; ocelli in a very slightly acute angle, posterior ocellus separated from occipital margin by about twice its diameter and from eye margin by about its own diameter. Antennal scrobes shallow, meeting dorsally and clearly reaching more than half way to anterior ocellus from antennal toruli; antennal torulus separated from mouth margin by a little less than its own diameter and separated from other torulus by nearly one and one-half times its length, its middle being about level with lower eye margins; clypeal margin broadly excised between toruli. Antennal scape much longer than minimum width of frontovortex, cylindrical, slightly wider near base, about five or six times as long as broad, pedicel conical, at least slightly longer than any funicle segment, all of which are longer than wide and slightly widening distally; clava three-segmented, about half as long as funicle, with apex more or less rounded, its sutures almost parallel; longitudinal sensillae on all but the first two flagellar segments. Frontovortex with squamiform-reticulate sculpture, deepest in front of anterior ocellus, fairly shallow behind ocelli and towards lower parts of face where it becomes more longitudinally elongate; frontovortex clothed in sparse, rather inconspicuous, moderately long translucent setae. Mandible tridentate, the upper tooth short and blunt; maxillary palpus three-segmented, labial palpus two-segmented.

**Thorax.** In side view moderately deep with metapleurum distinct, clearly broadening ventrad and, together with propodeum, broadly in contact with hind coxa and dorsally with both mesoscutum and scutellum flat. In dorsal view posterior margin of pronotum strongly concave; visible part of mesoscutum about one-half broader than long with notaular lines present anteriorly (the area around each notaular line slightly concave), posterior margin of mesoscutum almost straight; axillae meeting medially; scutellum nearly one and one-half times as long as broad and about one-third longer than mesoscutum, with its apex blunt; propodeum medially a little less than one-third length of scutellum. Mesoscutum with moderately

deep, raised, squamiform-reticulate or reticulate sculpture, that on scutellum similar but distinctly more longitudinally elongate; propodeum medially almost smooth, but with some shallow reticulate sculpture; dorsum of thorax with moderately dense short, recumbent, fairly inconspicuous, translucent setae. Forewing hyaline, wing about three times as long as broad; lineae calva not interrupted and nearly closed near posterior margin of wing; filum spinosum absent; venation yellowish, submarginal vein with an inconspicuous apical hyaline break and with parastigma clearly swollen, much broader than proximal two-thirds of submarginal vein; marginal vein about five or six times as long as broad and a little longer than either postmarginal or stigmal veins which are subequal in length; costal cell about 10–11 times as long as broad, with a single line of setae dorsally in distal half. Hindwing about three-quarters as long as forewing, about six times as long as broad, with marginal fringe about one-third maximum wing width. Mid tibial spur shorter than basal mid tarsal segment.

*Gaster*. A little shorter than thorax, cercal plates at about midway along its length; hypopygium reaching apex of gaster; paratergites not distinct in slide-mounted material available; last tergite a little longer than half length of mid tibia; gonostyli fused to second valvifers and about one-sixth as long as ovipositor which is a little more than half as long as mid tibia.

♂. Differs from female as follows. Eye with posterior margin convex, with setae very sparse and inconspicuous, clearly separated from occipital margin by nearly diameter of posterior ocellus; eye smaller so that malar space is nearly half length of eye and frontovertex clearly more than half head width; ocelli forming an obtuse angle, with posterior ocellus slightly closer to occipital margin than to eye margin, being separated from the latter by a little more than its own diameter; antennal scrobes more broadly semicircular, meeting dorsally and separated from anterior ocellus by not more than its diameter, antennal torulus separated from mouth margin by slightly more than its own length and from other torulus by about its own length, its lower margin only very slightly below ventral margins of eyes; antenna with scape about as long as width of frontovertex and about four times as long as broad, broadest near base, pedicel conical and subquadrate, much less than half length of any of funicle segments which are cylindrical and at least about three times as long as broad, setae on flagellum about four times as long as diameter of segments, clava entire, longer than any funicle segment, longitudinal sensillae on all flagellar segments; sculpture of head clearly shallower than in female, the frontovertex distinctly more shiny. Thorax in profile with mesoscutum slightly concave, in dorsal view scutellum about same length as mesoscutum; propodeum medially about one-fifth length of scutellum; forewing with postmarginal vein a little longer than either marginal or stigmal veins which are subequal in length; costal cell a little narrower than in female; hindwing about two-thirds length of forewing, with marginal fringe about one-half maximum wing width; mid tibial spur nearly as long as basal mid tarsal segment. Gaster about as long as thorax; genitalia with digiti long with apical hooks, nearly half length of aedeagus, aedeagus about one-half length of mid tibia or twice length of mid tibial spur.

COMMENTS. This genus belongs to the Charitopidini (Tetracneminae). The general body structure suggests a close affinity with *Charitopus* from which it can be separated in the female by the colour and structure of the antenna and incomplete notaular lines (complete in *Charitopus*); the male can be separated by the unbranched antenna and incomplete notaular lines.

***Eotopus beneficus* (Shafee) comb. n.**

(Figs 150, 325–327)

It is quite clear from Shafee's (1981) original description that his material had been in alcohol and therefore parts of his description need augmenting or correcting as follows.

♀. Length: 0.92–1.59 mm.

*Colour*. Head dark metallic green with some coppery or purple reflections, particularly on frontovertex, antenna from yellowish to testaceous yellow; pronotum and mesoscutum varying from almost entirely orange with a darker longitudinal metallic green stripe to almost entirely metallic green with orange area at extreme sides outside notaular lines, axillae from entirely orange through metallic green to deep metallic purple, scutellum metallic green to metallic green mixed purple and blue; sides of thorax from almost entirely orange to almost entirely dark brown (especially the mesopleurum); propodeum medially dark brown, laterally dark brown mixed to a lesser or greater extent with orange; wings hyaline but very lightly stained yellow; legs, including coxae, pale orange-yellow; gaster mostly orange with tergites laterally strongly metallic purple.

*Head.* As in original description except that posterior ocellus is separated from occipital margin by at least slightly more than and usually nearly twice its own diameter. Relative measurements of head: length 60, width (facial view) 70, width (side view) 38, minimum frontovertex width 24, malar space 12, eye length 48, eye width 33, POL 12, OOL 4, scape length 40, scape width 7, antenna as in Fig. 325. There is a little variation in the relative width of the frontovertex, but it is usually about one-third maximum head width; Shafee states that the scape is 'slightly more than four times as long as wide', but in no specimens has it been found to be as broad, usually about five and one-half times as long as broad; there is also some variation in the relative proportions of the flagellar segments, the distal segments sometimes at least one-half longer than broad whereas usually they are only about one-quarter longer than broad; there is also some variation in the size of the ocelli so that POL and OOL may be a little different from that given above.

*Thorax.* Forewing very nearly three times as long as broad, not two and one-half times as given by Shafee. There is some variation in the relative length of the postmarginal vein which is normally about as long as the stigmal, but in some specimens it is clearly a little shorter, both types occurring occasionally in a single specimen. Relative measurements: forewing length 165, width 56, hindwing length 119. Forewing base as in Fig. 150.

*Gaster.* Relative lengths: last tergite 45, ovipositor 52, gonostyli approx. 7, [mid tibia 86]. Genitalia as in Fig. 326.

♂. Differs from female as follows. *Colour.* Very much as female except that lower parts of face often coloured orange, gaster more or less entirely orange but with apical one-half to one-third dorsally brown; ocelli forming a distinctly obtuse angle; for antenna see Shafee (1981: fig. j); relative measurements: head length 40, head width (facial view) 14, minimum width of frontovertex 28, malar space 12, eye length 23, eye width 17, POL 12, OOL 6, scape length 19. Genitalia as in Fig. 327; relative lengths: aedeagus 34, mid tibial spur 16. There is some variation in the relative width of the frontovertex so that in some specimens it is a little broader than length of scape, also POL may be a little less than twice OOL depending on the relative size of the ocelli and width of frontovertex.

**DISTRIBUTION.** India.

**BIOLOGY.** Reared from *Icerya pilosa* Green (Homoptera, Margarodidae) on *Saccharum officinarum* Linnaeus (Shafee, 1981).

#### MATERIAL EXAMINED

**India:** 1 ♀, determined as *Ericydnus beneficus* Shafee and probably a paratype but no data or determination labels; 1 ♀, Uttar Pradesh, Aligarh, on grass, 23.ii.1979 (*M. Hayat & M. Verma*); 1 ♀, Uttar Pradesh, Aligarh, 20.viii.1979 (*M. Verma*); 1 ♀, Tamil Nadu, Shembaganur, x.1979 (*J. S. Noyes*); 2 ♀, 7 ♂, Kerala, Periyar Animal Sanctuary, 5–15.x.1979 (*J. S. Noyes*); 3 ♀, 7 ♂, Tamil Nadu, 3 km E. of Manjaler Dam, 5–18.x.1979 (*J. S. Noyes*), 1 ♂, Tamil Nadu, Anamalai Animal Sanctuary, 21.x.1979 (*J. S. Noyes*); 9 ♀, 6 ♂, Tamil Nadu, Mudumalai Animal Sanctuary, 23–24.x.1979 (*J. S. Noyes*); 26 ♀, 8 ♂, Karnataka, Mudigere, 26.x-4.xi.1979 (*J. S. Noyes*); 13 ♀, 6 ♂, Karnataka, 25 km W. of Mudigere, 28.x-3.xi.1979 (*J. S. Noyes*); 1 ♂, Karnataka, Bannerghatta N. P., 5.xi.1979 (*Z. Bouček & J. S. Noyes*); 1 ♂, Kerala, Calicut University Area, xi.1979 (*Z. Bouček*); 1 ♂, Hyderabad, Patancheru, ICRISAT, vii-ix.1980, Malaise trap (Bernays & Woodhead) (BM, HC, USNM, UCR, ZI, PPRI).

### *EPANUSIA* Girault

(Key couplet: 107)

*Epanusia* Girault, 1915a: 154. Type-species: *Epanusia bifasciatus* Girault, by original designation.

**DISTRIBUTION AND SPECIES.** Australia only; two species: *beenleighi* Girault (1923e: 5) and *bifasciata* Girault (1915a: 154).

**BIOLOGY.** Unknown.

**COMMENTS.** The two included species are very close but are distinct. They can be separated on the shape of the scape, but more easily by the extent of the infusate areas of the forewing; the forewing of *beenleighi* is infusate to its base, whilst that of *bifasciata* is largely hyaline in the basal cell.

The genus belongs to the same group as *Cryptanusia* (see comments under *Cryptanusia*).

**EPIBLATTICIDA** Girault

(Key couplets: 197, 367, 506)

*Epiblatticida* Girault, 1915a: 117. Type-species: *Epiblatticida lambi* Girault, by original designation.*Neasteropaeus* Girault, 1915a: 109. Type-species: *Neasteropaeus caudatus* Girault, by original designation.**Syn. n.***Blatticidella* Girault, x.1923c: 144. Type-species: *Blatticidella aereitibiae* Girault, by monotypy.[Homonym of *Blatticidella* Gahan & Fagan, iv. 1923.] **Syn. n.***Microencyrtus* Girault, 1923c: 147. Type-species: *Microencyrtus minutissimus* Girault, by monotypy.**Syn. n.***Magellanana* Girault, 1939b: 324. [Replacement name for *Blatticidella* Girault.] **Syn. n.**

DISTRIBUTION AND SPECIES. Australia, New Caledonia and New Zealand only; five described species: *aereitibiae* (Girault, 1923c: 144) (**comb. n.** from *Blatticidella*) (Australia), *argentipes* (Girault, 1925b: 99) (**comb. n.** from *Epitetracnemus*) (Australia), *caudatus* (Girault, 1915a: 109) (**comb. n.** from *Neasteropaeus*) (Australia), *lambi* Girault (1915a: 117) (Australia) and *minutissimus* (Girault, 1923c: 147) (**comb. n.** from *Microencyrtus*), also undetermined material from New Caledonia and New Zealand (BMNH, BPBM, DSIR).

BIOLOGY. Hyperparasites of Psyllidae (Homoptera) via other Encyrtidae.

COMMENTS. Closely related to *Coccidoctonus* (see comments, p. 254).**EPIDINOCARSIS** Girault

(Key couplets: 174, 221. Fig. 94)

*Epidinocarsis* Girault, 1913b: 83. Type-species: *Epidinocarsis tricolor* Girault, by original designation.*Apoanagyrus* Compere, 1947a: 18. Type-species: *Apoanagyrus californicus* Compere, by original designation. **Syn. n.**

DISTRIBUTION AND SPECIES. Fifteen species, New World, Palaearctic, Oriental, Australasian and Pacific; seven species from review area: *anamalaianus* (Mani & Kaul in Mani *et al.*, 1974: 63) (**comb. n.** from *Anagyrus*) (India), *auratiscutum* Girault (1915a: 144) (Australia), *californicus* (Compere, 1947a: 18) (**comb. n.** from *Apoanagyrus*) (Hawaiian Is.), *cuneinota* Girault (1915a: 144) (Australia), *marquesanus* (Timberlake, 1941: 220) (**comb. n.** from *Anagyrus*) (Marquesas Is.), *rotundiceps* (Girault, 1932a: 3) (**comb. n.** from *Dinocarsis*) (Australia) and *tricolor* Girault (1913b: 83) (Australia).

REFERENCE. Partial revision: Kerrich (1982: 407–416).

BIOLOGY. Parasites of Pseudococcidae (Homoptera).

COMMENTS. Two of the above species may be misplaced here, but we have placed them in this genus in an attempt to achieve a degree of consistency within the key. One is *marquesanus* which shows an affinity with *punctifrons* (Timberlake) which we place in *Doliphoceras* only because of a difference in the sculpture of the scutellum (a character used to separate these two genera). The other is *rotundiceps* which could also be placed in *Anagyrus* because the sculpture of the head and mesoscutum is somewhat intermediate between the two genera (see comments under *Anagyrus*).

We deliberated for some time before synonymising these two genera, but since we were unable to find any real difference between *tricolor* and *californicus* (the respective type-species) except colour we decided to do so here. Although *Apoanagyrus* is a fairly well-known name we do not think that it is necessary to submit an application to the International Commission on Zoological Nomenclature to ask for suppression of *Epidinocarsis* in favour of *Apoanagyrus*. Our reasons for this are that we do not think the use of *Epidinocarsis* will lead to undue confusion in the literature and also that a detailed study of this group of genera on a world-wide basis may result in the synonymy of *Epidinocarsis* (and thus *Apoanagyrus*) and *Doliphoceras* with *Anagyrus* (see also comments under *Anagyrus*).

As a result of this new generic synonymy we also propose the following transfers of extra-limital species from *Apoanagyrus* to *Epidinocarsis*: *bermudensis* Kerrich, *diversicornis* Howard, *elgeri* Kerrich, *gaudens* Kerrich, *lopezi* De Santis, *malenotus* De Santis, *montivagus* De Santis and *trinidadiansis* Kerrich (all **comb. n.**).

### **EPISTENOTERYS** Girault

(Key couplets: 364, 390)

*Epistenoterys* Girault, 1915a: 149. Type-species: *Epistenoterys marmoratipes* Girault, by monotypy.

*Gounodia* Girault, 1940: 149. Type-species: *Gounodia mellea* Girault, by monotypy. **Syn. n.**

**DISTRIBUTION AND SPECIES.** Two species, Australia only: *marmoratipes* Girault (1915a: 149) and *mellea* (Girault, 1940: 149) (**comb. n.** fom *Gounodia*), also undetermined material from Australia containing at least one further species (BMNH).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** The above two species appear to differ only in coloration and minor morphological characters which we regard as specific and not generic differences. Perhaps the most significant difference between the two is the length of the malar space relative to the eye. In *mellea* it is only a little shorter than the eye whereas in *marmoratipes* it is a little less than two-thirds the length of an eye.

The genus is related to *Aphycus*, *Cirrhencyrtus* Timberlake and possibly *Pseudaphycus* (tribe Aphycini, subtribe Aphycina).

### **EPITETRACNEMUS** Girault

(Key couplets: 140, 488. Fig. 72)

*Epitetracnemus* Girault, 1915a: 164. Type-species: *Epitetracnemus sexguttatipennis* Girault, by original designation.

*Anabrolepis* Timberlake, 1920: 431. Type-species: *Anabrolepis extranea* Timberlake, by original designation. **Syn. n.**

**DISTRIBUTION AND SPECIES.** Five species, cosmopolitan; three from review area: *extraneus* (Timberlake, 1920: 434) (**comb. n.** from *Anabrolepis*) (Hawaiian Is.), *sexguttatipennis* (Girault, 1915a: 164) (Australia) and *zetterstedti* (Westwood; Mercet, 1921: 678) (**comb. n.** from *Encyrtus*) (New Zealand), also at least one further species amongst material from India, S. China, New Caledonia and Australia (BMNH, BPBM).

**REFERENCE.** Review of most species: Tachikawa (1955).

**BIOLOGY.** Parasites of Diaspididae (Homoptera).

**COMMENTS.** The following extra-limital species are also transferred from *Anabrolepis* to *Epitetracnemus*: *japonicus* Ishii and *lindingaspidis* Tachikawa (both **comb. n.**).

This genus belongs to the tribe Habrolepidini, subtribe Habrolepidina (Encyrtinae) and is closely related to *Adelencyrtus* (see comments under *Adelencyrtus*).

### **EPITETRALOPHIDEA** Girault

(Key couplets: 194, 519. Fig. 115)

*Epitetrалophidea* Girault, 1915a: 176. Type-species: *Epitetrалophidea bicinctipes* Girault, by original designation.

*Ectromomyiella* Girault, 1915a: 160. Type-species: *Ectromomyiella articulus* Girault, by original designation. **Syn. n.**

**DISTRIBUTION AND SPECIES.** Three species, all Australian: *articulus* (Girault, 1915a: 160) (**comb. n.** from *Ectromomyiella*), *bicinctipes* Girault (1915a: 176) (= *Epitetrалophidea bicinc-*

*tipis emersoni* Girault, 1923c: 142 **syn. n.**) and *magnithorax* (Girault, 1923c: 146) (**comb. n.** from *Ooencyrtus*).

BIOLOGY. Unknown.

COMMENTS. Girault unfortunately described *articulus* from a single male. However, amongst material on the same slide as the type of *Casca nigra* Girault, *Ablerus speciosus* Girault, *Perisopterus inexplicabilis* Girault and *Ooencyrtus magnithorax* Girault, are some males which appear to be identical to the holotype of *articulus*. It would seem reasonable to assume that all this material may have been reared from the same host and put on one slide (under two separate coverslips). Therefore it is likely that the encyrtid males under one coverslip are the same species as the encyrtid females, *Ooencyrtus magnithorax*, under the other. Since *magnithorax* is here considered to be congeneric with *bicinctipes* we have no hesitation in regarding *Ectromomyiella* as a synonym of *Epitetrалophidea*.

*Epitetrалophidea* appears to be very close to *Coccidencyrtus* (tribe Habrolepidini) from which it can be separated by the uninterrupted linea calva and the two-segmented funicle in the male. The latter suggests that it may also be closely related to *Adelencyrtus* from which it differs in having the mandible with a single tooth and a broad truncation, that of *Adelencyrtus* having four teeth or occasionally two teeth and a truncation.

### **ERENCYRTUS** Mahdihassan

(Key couplets: 178, 394. Fig. 103)

*Erencyrtus* Mahdihassan, 1923: 71. Type-species: *Erencyrtus dewitzi* Mahdihassan, by monotypy.

DISTRIBUTION AND SPECIES. Four species, Afrotropical, Oriental, Australasian; two from review area: *dewitzi* Mahdihassan; Ferriere (1935: 396) (India, Pakistan) and *keatsi* (Girault, 1939a: 21) (**comb. n.** from *Mesastymachus*) (Australia).

REFERENCES. Annecke & Mynhardt (1970a), Prinsloo & Mynhardt (1982: 38–41).

BIOLOGY. Parasites of lac insects (Homoptera, Keriidae).

COMMENTS. The genus is easily recognisable in that the antenna of the male has a very short two-segmented funicle and the clava is extremely long (more than twice as long as the scape and pedicel together) and unsegmented.

Placed in the tribe Microteriyini, subtribe Microteriyina by Trjapitzin (1973b).

### **ERICYDNUS** Walker

(Key couplet: 211)

*Ericydnus* Walker, 1837: 363. Type-species: *Ericydnus paludatus* Walker, by designation of Westwood (1840: 71).

*Grandoriella* Domenichini, 1951: 171. Type-species: *Grandoriella lamasi* Domenichini, by original designation.

DISTRIBUTION AND SPECIES. Thirteen species, cosmopolitan; none known from review area, but undescribed species examined from India, New Guinea and Australia (BMNH, BPBM).

REFERENCE. World revision: Kerrich (1967: 167–180).

BIOLOGY. Parasites of Pseudococcidae (Homoptera).

COMMENTS. Two other species previously placed in *Ericydnus*, i.e. *chrysos* (Walker, 1839: 34) and *megalarus* (Walker, 1838b: 477), do not belong in the Encyrtidae (see Kerrich, 1967: 179).

The species from the Australasian and Oriental regions differ from the known species of *Ericydnus* in that the antennal toruli are placed relatively higher on the head with their ventral margins being nearly level with the ventral margins of the eyes. They also have a sharper occipital margin and the relative length of the gaster is less. We do not consider that these

differences warrant separate generic status, but if future workers regard these species as belonging to a separate genus they should perhaps consider using *Grandoriella* as a generic name for this group.

The genus is placed in the tribe Ericydini (Tetracneminae).

***ETHORIS* gen. n.**

(Key couplet: 315. Figs 156, 187, 328–331)

Type-species: *Ethoris dahmsi* sp. n. Gender: feminine.

♀. *Head*. In frontal view about as long as broad, in profile less than twice as long as broad and more or less gradually and evenly rounded anteriorly, but more strongly so at top of antennal scrobes. Eyes with posterior margin almost straight but very slightly concave, about one-third longer than broad, clothed in fairly dense translucent setae each a little longer than the diameter of a facet; eye reaching occipital margin which is more or less sharp but not strongly so. Malar space about half as long as eye with sulcus present. Frontoververtex about half head width or a little less; ocelli nearly forming an equilateral triangle, the posterior ones about equidistant from occipital and eye margins or a little nearer the latter, separated from eyes by slightly less than to much less than their own diameters. Antennal scrobes shallow, separated dorsally by interantennal prominence which is confluent with frontoververtex, fairly sharp at this point and extends almost all the way to mouth margin, scrobes very short, only reaching about one-quarter way from toruli to anterior ocellus; antennal torulus separated from mouth margin by nearly twice its length and from other torulus by about its own length, its lower margin only a little below the lower margins of eyes; clypeus with margin straight or very slightly produced medially. Antennal scape subcylindrical, about five or six times as long as broad and clearly longer than minimum width of frontoververtex; pedicel conical, about one-third length of scape and subequal in length to any of the funicle segments all of which are clearly longer than broad and are cylindrical; clava about two-fifths as long as and not wider than funicle, three-segmented, apically rounded and almost pointed with sutures parallel. Frontoververtex with shallow, raised, reticulate sculpture, becoming more irregular and elongate at top of scrobes and between scrobes and eyes and on genae; setae on frontoververtex sparse, about as long as diameter of an ocellus. Mandible with three acute teeth; maxillary palpus relatively long, four-segmented, apical segment nearly one and one-half times as long as mandible and a little shorter than its apical seta; labial palpus three-segmented.

*Thorax*. In side view moderately deep, mesoscutum slightly convex, scutellum clearly more convex than mesoscutum; metapleurum and propodeum very narrowly in contact with hind coxa. In dorsal view pronotum with hind margin moderately concave; visible part of mesoscutum about twice as broad as long, notaular lines absent, hind margin more or less straight, only slightly convex; axillae meeting; scutellum about as long as mesoscutum, about as broad as long and apically rounded; propodeum medially about one-fifth length of scutellum. Mesoscutum with shallow, raised, squamiform-reticulate sculpture, axillae similar but a little finer and deeper; scutellum with conspicuously deeper, reticulate sculpture, regular medially but more elongate towards sides, extreme apex and sides smooth; mesopleurum almost smooth, but with some irregular, very shallow sculpture; propodeum medially smooth; dorsum of thorax with fairly numerous, moderately long, pale brown, inconspicuous setae. Forewing hyaline, about two and one-half times as long as broad; lineae calva not interrupted or closed; filum spinosum present; submarginal vein with an apical hyaline break; costal cell about 10 or 11 times as long as broad; marginal vein about five or six times as long as broad, slightly shorter than to one and one-half times as long as stigmal and clearly shorter than postmarginal vein; postmarginal and stigmal veins forming an unusually acute angle. Hindwing a little less than two-thirds as long as forewing, about four and one-half times as long as broad, with marginal fringe about one-quarter as long as maximum width of wing. Mid tibial spur about as long as basal mid tarsal segment.

*Gaster*. About as long as thorax; cercal plates in basal half; hypopygium with apex about two-thirds along gaster; last tergite about two-thirds as long as mid tibia; ovipositor very slightly exerted, a little shorter than mid tibia; gonostyli free, about one-quarter as long as ovipositor.

♂. Unknown.

COMMENTS. We are unable to place the genus according to Trjapitzin's (1973b) classification of the Encyrtinae. It may be close to either *Ageniaspis* (Copidosomatini, Ageniaspidina) or less probably to *Rhytidothorax*. The relatively high position of the antennal toruli and the very long terminal segments of the maxillary palpus should separate it from either of these genera; the

conformation of the antenna, the sculpture and coloration from *Ageniaspis* and the less prominent hypopygium and short propodeum from *Rhytidothorax*.

The type-species is named in honour of Mr E. C. Dahms (QM).

***Ethoris dahmsi* sp. n.**

(Figs 156, 187, 328–331)

♀. Length: 1.05–1.14 mm (holotype, 1.05 mm).

**Colour.** Head dark metallic green with slight coppery sheen between anterior ocellus and antennal scrobes; scape yellowish, pedicel, funicle and basal segment of clava dark brown, apical two segments of clava white; face of pronotum medially, anterior margin of mesoscutum medially dark brown; scutellum except sides dark metallic green, remainder of thorax, including legs, pale orange with metanotum and dorsum of propodeum darker brownish orange; gaster dorsally brown, ventrally pale orange.

**Head.** Relative measurements (holotype): head length 55, head width (facial view) 58, head width (side view) 33, minimum frontovertex width 24, malar space 19, eye length 37, eye width 28, POL 9, OOL 4, diameter of anterior ocellus 5, scape length 33, scape width 6, proportions of antennal segments as in Fig. 328, head in facial view as in Fig. 331, mandible as in Fig. 329.

**Thorax.** Relative measurements (holotype): forewing length 155, width 61; hindwing length 102, width 22.5; base of forewing as in Fig. 156, venation as in Fig. 187. The angle between the stigmal and postmarginal veins is a little variable and may be slightly greater than in Fig. 187.

**Gaster.** Relative lengths (paratype): last tergite 63, ovipositor 85, gonostyli 23, [mid tibia 94]. Genitalia as in Fig. 330.

♂. Unknown.

**DISTRIBUTION.** Sulawesi, India.

**BIOLOGY.** Unknown.

**MATERIAL EXAMINED**

Holotype ♀, **Sulawesi:** Tengah, nr Morowali, ii.1980, Ranu River area, lowland rain forest, Malaise trap (*M. J. D. Brendell*) (BMNH).

Paratypes. **Sulawesi:** 1 ♀, same data as holotype, iii.1980. **India:** 1 ♀, Hyderabad, Patancheru, ICRISAT, vii–ix.1980, Malaise trap (*Bernays & Woodhead*) (BMNH).

**COMMENTS.** Also found in Zimbabwe and Cameroun (BMNH) and may be the same as *dahmsi* from which it differs slightly in coloration, relative size and position of ocelli and relative proportion of stigmal vein of forewing to marginal vein.

***EUCOMOMORPHELLA* Girault**

(Key couplet: 459)

*Eucomomorphella* Girault, 1923c: 100. Type-species: *Eucomomorphella emersoni* Girault, by monotypy.

**DISTRIBUTION AND SPECIES.** Australia only, one species: *emersoni* Girault (1923c: 100).

**BIOLOGY.** Unknown.

**COMMENTS.** The genus is probably related to *Prionomastix* (tribe Prionomasticini, subtribe Prionomasticina) and differs from this and related genera by having three teeth in the mandible and the hypopygium not reaching half way along gaster (see also comments under *Anagyrodes* and *Encyrtus*).

***EUGAHANIA* Mercet**

(Key couplet: 143. Fig. 78)

*Eugahania* Mercet, 1926: 43. Type-species: *Bothriothorax fumipennis* Ratzeburg, by original designation.

**DISTRIBUTION AND SPECIES.** Four species, Palaearctic, Oriental and Australasian; two species from review area: *ishiharai* Tachikawa (1956: 164) (India) and *latiscapus* (Ishii, 1925: 27)

(India), also undetermined specimens from India, Vietnam, Taiwan, Indonesia, Irian Jaya and Papua New Guinea (BMNH, BPBM, RMNH).

REFERENCE. Key to species: Hayat & Khanna (1977).

BIOLOGY. Parasites of nymphs of Cicadellidae (Homoptera).

COMMENTS. Placed in the tribe Eugahaniini (Encyrtinae) (see also comments under *Anagyrodes* and *Encyrtus*).

### **EURYRHOPALUS** Howard

(Key couplet: 501)

*Euryrhopalus* Howard, 1898b: 237. Type-species: *Euryrhopalus schwarzi* Howard, by monotypy.  
*Synaspidia* Timberlake, 1924: 397. Type-species: *Synaspidia pretiosa* Timberlake, by original designation.

DISTRIBUTION AND SPECIES. Nine species, New World; one species from review area: *propinquus* Kerrich (1967: 240) (Hawaiian Is.).

REFERENCE. World revision: Kerrich (1967: 235–246).

BIOLOGY. Parasites of Pseudococcidae (Homoptera).

COMMENTS. The genus belongs to the tribe Aenasiini (see comments under *Aenasius*). A key separating *Euryrhopalus* from related genera is provided by Kerrich (1967: 188–190).

### **EUSEMION** Dahlbom

(Key couplet: 112. Fig. 51)

*Eusemion* Dahlbom, 1857: 293. Type-species: *Encyrtus corniger* Walker, by subsequent monotypy, Thomson, 1876: 154.

DISTRIBUTION AND SPECIES. Two species, Palaearctic; one of these from New Zealand: *cornigerum* (Walker; Annecke, 1967: 103).

BIOLOGY. Parasites of Coccidae (Homoptera).

COMMENTS. Placed in the tribe Cerapterocerini (Encyrtinae). A key to separate *Eusemion* from related genera is provided by Annecke (1967: 100–101).

### **EXORISTOBIA** Ashmead

(Key couplets: 201, 334, 449, 531. Fig. 238)

*Exoristobia* Ashmead, 1904a: 15. Type-species: *Exoristobia philippinensis* Ashmead, by monotypy.  
*Parasyrphophagus* Girault, 1915a: 105. Type-species: *Parasyrphophagus funeralis* Girault, by original designation. **Syn. n.**

*Parageniapsis* Masi, 1917b: 154. Type-species: *Parageniapsis macrocerus* Masi by monotypy. **Syn. n.**  
*Mirsyrphophagus* Girault, 1923a: 49. Type-species: *Mirsyrphophagus columbi* Girault, by monotypy. **Syn. n.**

DISTRIBUTION AND SPECIES. Six species, Afrotropical, Oriental and Australasian; three from review area: *columbi* (Girault, 1923a: 49) (**comb. n.** from *Mirsyrphophagus*) (Australia), *funeralis* (Girault, 1915a: 105) (**comb. n.** from *Parasyrphophagus*) (Papua New Guinea, Australia) and *philippinensis* Ashmead (1904a: 15) (Pakistan to Papua New Guinea), also undetermined material from Thailand to New Hebrides (BMNH, BPBM).

REFERENCE. Subba Rao (1970).

BIOLOGY. Parasites of Syrphidae, Tachinidae and Phoridae (Diptera).

COMMENTS. The single extant female of *Parageniapsis macrocerus* Masi in the collection of the BMNH is here designated LECTOTYPE. It belongs to the genus *Exoristobia* (**comb. n.**). The

female syntype in the ZMCU belongs to *Cerchysiella*, whilst the single male syntype (BMNH) is very probably the male of *macrocerus*.

One species (BMNH) which has been reared from Phoridae associated with pitcher plants (see Beaver, 1979) is very distinct, having the dorsum of the thorax extremely hairy and the prothoracic spiracle very enlarged and prominent, being clearly visible at low magnification in dry-mounted material.

The two genera described by Girault differ only slightly from each other and from *philippinensis* in the shape of the mandible, but since this can vary even in a single specimen it is not considered to be of generic value. The genus may belong in the Microterytini but we are unable to place it with any degree of certainty according to Trjapitzin's (1973b) classification of the Encyrtinae. Trjapitzin & Gordh (1978b) place it in the tribe Cheiloneurini, subtribe Epiencyrtina which must be incorrect.

### **FULGORIDICIDA** Perkins

(Key couplets: 339, 431, 437)

*Fulgoridicida* Perkins, 1906: 250. Type-species: *Fulgoridicida dichroma* Perkins, by monotypy.

DISTRIBUTION AND SPECIES. Five species, all Australian: *cervantesi* Girault (1923: 47), *dichroma* Perkins (1906: 250), *minuta* Girault (1915: 148), *nigricorpus* Girault (1915a: 148) and *simpliciscapus* Girault (1915a: 148), also at least one further species from Papua New Guinea and Australia (BMNH, BPBM).

BIOLOGY. Parasites of eggs of Eurybrachidae (Homoptera).

COMMENTS. Girault (1915a: 147) transferred *Anagyrus saintpierrei* Girault to *Fulgoridicida*, but this is probably not correct. It is more likely that *saintpierrei* is an aberrant species of *Coelopencyrtus*.

The genus is quite close to *Ooencyrtus* (Microterytini, subtribe Ooencyrtina) but differs mainly in having fairly deep punctate-reticulate sculpture on the head and mesoscutum and a bidentate mandible (that of *Ooencyrtus* has one or two teeth and a truncation or, rarely, three teeth).

### **GAHANIELLA** Timberlake

(Key couplets: 190, 435. Figs 113, 227, 324)

*Gahaniella* Timberlake, 1926: 23. Type-species: *Gahaniella californica* Timberlake, by original designation.

DISTRIBUTION AND SPECIES. Three species, New World; one species from review area: *saissetiae* Timberlake (1926: 27) (Hawaiian Is.).

REFERENCE. Kerrich (1953: 800–802).

BIOLOGY. Hyperparasites of Coccidae and Pseudococcidae (Homoptera) via other Encyrtidae, possibly also primary parasites of Coccidae.

COMMENTS. Placed in the tribe Microterytini by Trjapitzin & Gordh (1978b). The genus can be recognised by the relatively high placement of the antennal toruli (Fig. 113) and the subequal pedicel and funicle segments (Fig. 227).

### **GENTAKOLA** gen. n.

(Key couplet: 155. Figs 84, 85, 332–339)

Type-species: *Comperiella trifasciata* Saraswat. Gender: feminine.

♀. *Head*. Prognathous, occipital foramen situated in dorsal one-third of occiput; head in dorsal view a little longer than broad and subrectangular with occipital margin distinctly concave, in side view also subrec-

tangular, about one-half longer than broad and with genae dorso-anteriorly produced above and to side of the antennal toruli (Fig. 332). Eye with posterior margin clearly convex, about one-half longer than broad, with fairly sparse inconspicuous setae each very slightly longer than the diameter of a facet and about half as long as those on frontovertex, eye not quite reaching occipital margin which is sharp. Malar space about half length of eye and with sulcus absent. Frontovertex slightly more than one-third head width; ocelli forming a very slightly acute angle, posterior ocellus separated from occipital and eye margins by slightly less than its own diameter. Antennal scrobes not deep but bounded laterally by the dorso-anterior projection of the genae and dorsally by the sharp angle resulting from the face being sharply inflexed at this point, thus the scrobes more or less semi-circular and reaching about three-eighths way from antennal toruli to anterior ocellus; antennal torulus separated from mouth margin by not more than half its length and from other torulus by about twice its length, its dorsal margin well below ventral level of eyes; clypeal margin very shallowly excised between toruli. Antennal scape much longer than minimum width of frontovertex, clearly broadened and flattened, subrectangular about twice as long as broad, pedicel conical, about one-third length of scape or funicle, the latter a little shorter than the scape, all funicle segments transverse, at least about twice as broad as long and broadly oval in cross section, slightly broadening distally so that sixth segment is clearly as broad as clava which is two-segmented, with apex rounded and a little shorter than funicle; longitudinal sensillae on all flagellar segments except the first two. Frontovertex entirely smooth and shiny, genal process with shallow irregular rugose sculpture, frontovertex with a few inconspicuous setae, each a little longer than diameter of an ocellus. Mandible narrow with three apical teeth, the middle one slightly the longest, maxillary palpus four-segmented, labial palpus three-segmented (a little obscure in the only slide preparation available and may be two-segmented).

*Thorax.* In side view very slightly dorso-ventrally flattened with mesoscutum and scutellum quite flat, metapleurum laterally obscure and, together with propodeum, quite broadly in contact with hind coxa. In dorsal view pronotum quite long, slightly longer than half mesoscutum and with posterior margin slightly concave; visible part of mesoscutum slightly less than twice as broad as long, without notaular lines and with its posterior margin slightly produced backwards medially; axillae meeting; scutellum about as long as broad, apically rounded with a very narrow apical flange which projects slightly over propodeum medially and slightly longer than mesoscutum; propodeum medially about one-fifth length of scutellum. Pronotum with shallow, raised, transverse rugose to squamiform-reticulate sculpture; mesoscutum with very shallow, transverse, rugose sculpture, scutellum completely smooth and polished, propodeum medially with shallow, irregular, raised reticulate sculpture; mesopleurum smooth; dorsum of thorax with sparse, short, recumbent dark setae. Forewing slightly bent upwards at about middle as in *Comperiella*, with three longitudinal fuscous streaks, about three times as long as broad; lineae calva not clearly defined and not interrupted, there being at most only one or two setae on surface of wing proximad of it (Fig. 334); filum spinosum present and directed towards junction of marginal and submarginal veins; submarginal vein with an apical hyaline break and with parastigma a little swollen; marginal vein about two and one-half to three times as long as broad, about one-half longer than postmarginal and subequal to stigmal vein, apex of venation not reaching half way along wing; costal cell about 11 or 12 times as long as broad, with a single line of setae dorsally in apical one-third. Hindwing also slightly infusate, about two-thirds as long as forewing, about four times as long as broad and with marginal fringe about one-quarter of wing width. Mid tibial spur very slightly longer than basal mid tarsal segment.

*Gaster.* Very slightly shorter than thorax; cercal plates in anterior one-half; hypopygium more or less reaching apex of gaster; paratergites absent; last tergite about as long as mid tibia; gonostyli free, about one-quarter length of ovipositor which is nearly as long as mid tibia.

♂. Differs from female as follows. Occipital foramen not quite in dorsal one-third of occiput, head about as long as broad in facial view, with only very slight dorso-anterior projections of genae; eye about one-quarter longer than broad, with setae not longer than diameter of a facet and clearly not reaching occipital margin which is sharp; malar space about half as long as eye; frontovertex a little more than head width; ocelli forming a right angle, antennal torulus separated from mouth margin by nearly its own length, from other torulus by slightly more than twice its own length; antennal scape distinctly shorter than width of frontovertex, subrectangular, stout, about twice as long as broad; pedicel a little less than half length of scape, subquadrate, longer than any funicle segment, all funicle segments transverse, the sixth being the longest and broadest and almost quadrate, clava entire, about half length of funicle; longest setae on flagellum about twice as long as diameter of corresponding segment; frontovertex almost entirely smooth but with some very shallow rugose-reticulate sculpture immediately above the scrobes. Mesoscutum with very shallow squamiform-reticulate sculpture. Forewing not bent at middle, hyaline and about two and one-half times as long as broad; apex of venation reaching about two-fifths along wing. Mid tibial spur distinctly longer than basal mid tarsal segment. Gaster a little shorter than thorax; genitalia with digiti

about one-fifth length of aedeagus which is slightly longer than half mid tibia or two and one-half times mid tibial spur.

COMMENTS. The genus superficially resembles *Comperiella*, but the structure of the gaster, the relatively long propodeum, the clearly tridentate mandible, the forewing venation and the filum spinosum being directed towards the junction of the submarginal and marginal veins suggest an affinity with *Cerchysiella* and *Zaommoencyrtus* which are placed in the tribe Bothriothoracini, subtribe Coenocercina. It can be separated from other members of the subtribe by the shape of the head, two-segmented clava and infusate forewing, the latter being bent upwards at the middle.

***Gentakola trifasciata* (Saraswat) comb. n.**

(Figs 84, 85, 332–339)

♀. The female can easily be recognised from Saraswat's (*in* Saraswat & Mukerjee, 1975: 51) original description. There seems to be some variation in colour; in one dry-mounted specimen the head is largely green or greenish blue with anterior genal protuberance more or less deep purple and the clypeus and interantennal prominence quite strongly orange; the scutellum is more strongly blue than in Saraswat's description. Also the mandible is quite clearly tridentate (not quadridentate) and the clava is two-segmented (not three-segmented) (Fig. 85). These discrepancies may have arisen as a result of Saraswat having based his description on uncleared slide-mounted material, the clava of the dry-mounted specimen examined having the appearance of being three-segmented. Genitalia as in Fig. 333, hypopygium as in Fig. 335.

♂. Length: 0.71 mm. Body generally dark purplish brown except scutellum which is slightly metallic green; leg coloration more or less as for female. For other characters see Figs 336–339.

DISTRIBUTION. India.

BIOLOGY. Unknown.

MATERIAL EXAMINED

India: 1 ♀, 1 ♂, Tamil Nadu, Coimbatore, 25.ix–1.x.1979 (*J. S. Noyes*); 1 ♀, Karnataka, Bannerghatta N. P., 5.xi.1979 (*Z. Bouček & J. S. Noyes*); 1 ♂, Delhi, IARI area, x.1979 (*Z. Bouček*) (BMNH).

**GYRANUSOIDEA Compere**

(Key couplets: 149, 172, 268. Fig. 93)

*Gyranoidea* Compere, 1947a: 17. Type-species: *Gyranoidea citrina* Compere, by original designation.

DISTRIBUTION AND SPECIES. Fifteen species, cosmopolitan except for Palaearctic; 7 species from review area: *advena* Beardsley (1969: 303) (Hawaiian Is.), *albiclavata* (Ashmead, 1905b: 404) (**comb. n.** from *Aphycus*) (Philippines), *ceroplastis* (Agarwal, 1965: 73) (India), *flava* Shafee, Alam & Agarwal (1975: 21) (India), *indica* Shafee, Alam & Agarwal (1975: 22) (India), *mirzai* (Agarwal, 1965: 46) (**comb. n.** from *Anagyrus*) (India) and *phenacocci* (Beardsley, 1969: 299) (Hawaiian Is.), also undetermined material from Taiwan, Philippines, Australia and New Britain (BMNH, BPBM, UCR, HC).

REFERENCE. Key to some species: Shafee *et al.* (1975: 21).

BIOLOGY. Parasites of Pseudococcidae (Homoptera).

COMMENTS. The genus belongs to the tribe Anagyrini, subtribe Anagyrina (Tetracneminae) and is extremely difficult to separate from *Anagyrus* on one hand and *Leptomastidea* on the other. We have separated it from *Anagyrus* solely by the postmarginal vein of the forewing being at least one-quarter longer than the stigmal whereas in *Anagyrus* it is not or hardly longer. This is an extremely doubtful character for separating the two genera, but we have found it more convenient and easier to define than the shape of the scape or sculpture of the head and thorax. From *Leptomastidea* we have separated it basically on the head and thorax having fine punctate sculpture of velvety or granulate appearance and the forewing being more or less hyaline,

whereas species placed in *Leptomastidea* have smoother, shallower sculpture and the forewing often with two or more fuscous fasciae. Use of the above characters has resulted in the undesirable transfer of some species from other genera to *Gyransoidea*, but we have found this necessary to achieve a degree of consistency within the key. We feel certain that an in-depth study of this group of genera on a world basis will result in the eventual synonymy of most genera of the Anagyrina. This is beyond the scope of the present work and therefore we have tried to retain most of the genera as valid even though it has meant separating some of them on weak characters such as those above (see also comments under *Anagyrus*).

### **HABROLEPIS** Förster

(Key couplet: 97. Fig. 48)

*Habrolepis* Förster, 1856: 34. Type-species: *Encyrtus nubilipennis* Walker, by original designation.  
*Gymnoneura* Risbec, 1951: 157. Type-species: *Gymnoneura bambeyi* Risbec, by monotypy.

**DISTRIBUTION AND SPECIES.** Twenty-one species, cosmopolitan; three species from review area: *dalmani* (Westwood; Annecke & Mynhardt, 1970: 134) (New Zealand), *neocaledonensis* Fabres (1974: 56) (New Caledonia) and *rouxi* Compere (1936a: 495) (Hawaiian Is.), also undetermined material, containing at least one further species, from Australia and Samoa (ANIC, CNC).

**REFERENCE.** Annecke & Mynhardt (1970b: 128–146).

**BIOLOGY.** Parasites of Diaspididae and Asterolecaniidae (Homoptera).

**COMMENTS.** Placed in the tribe Habrolepidini, subtribe Habrolepidina (Encyrtinae).

### **HALIGRA** gen. n.

(Key couplet: 532. Figs 253, 254, 340–345)

Type-species: *Haligra concolor* sp. n. Gender: feminine.

♀. **Head.** In facial view about as long as broad and in profile about three-fifths as broad as long and gradually curved dorsally, below top of antennal scrobes almost straight. Eye with posterior margin straight, about one-third longer than broad, with numerous conspicuous, translucent setae, each about as long as the diameter of a facet, eye almost touching occipital margin which is sharp. Malar space slightly longer than half eye length, with sulcus present. Frontovortex about one-third head width; ocelli forming a slightly acute angle, the posterior ocellus about equidistant from eye and occipital margins. Antennal scrobes shallow, meeting dorsally and almost semicircular, reaching about half way from toruli to anterior ocellus; antennal torulus separated from mouth margin by a little less than its own length and from other torulus by slightly more than its own length, its upper margin about half its length below level of lowest eye margin, clypeal margin very shallowly excised between toruli. Antennal scape clearly longer than minimum width of frontovortex, fairly slender, about five times as long as broad; pedicel conical, about one-third as long as scape and clearly much longer than any of the funicle segments which are all strongly transverse, the first the smallest and sixth the largest; clava three-segmented with a short oblique truncation apically, the outer suture converging slightly with the inner, clava about as long as and much broader than the funicle; longitudinal sensillae on fifth and sixth funicle segments and clava; longest setae on flagellum about as long as or a little longer than corresponding segment. Head almost totally smooth and shiny but with some extremely shallow, raised irregular sculpture on the frontovortex, immediately above scrobes and below this more or less completely smooth and polished except on genae posterior to malar suture and on temples which have very shallow, raised, reticulate sculpture; setae on frontovortex dark and conspicuous, each at least about twice as long as diameter of an ocellus, those on lower parts of face and interantennal prominence about the same. Mandible with three acute teeth, the middle one clearly the longest; maxillary palpus four-segmented, labial palpus two-segmented.

**Thorax.** In side view robust with mesoscutum and scutellum conspicuously convex, the metapleurum and propodeum not quite meeting the hind coxa, although mesopleurum clearly separated from basal segment of gaster. In dorsal view pronotum almost completely hidden, its posterior margin very concave; visible part of mesoscutum about twice as broad as long, with notaular lines absent and its posterior margin almost straight; axillae separated by about half the length of an axilla in dorsal view; scutellum a little

broader than long, apically rounded; propodeum medially about one-sixth length of scutellum. Mesoscutum with longitudinally elongate, raised, reticulate sculpture of moderate depth, the cells more or less arranged in lines which slightly converge posteriorly; scutellum with finer, striate-reticulate sculpture of about the same depth or a little deeper than mesoscutum; propodeum with irregular raised sculpture medially and some sculpture along its anterior margin nearly reaching spiracles; mesopleurum almost completely smooth but with some extremely shallow irregular sculpture. Forewing more or less completely hyaline but very faintly suffused brownish, between two and one-half to three times as long as broad; linea calva not interrupted but partially closed by two lines of setae; filum spinosum present; submarginal vein with an apical hyaline break, parastigma not conspicuously swollen; costal cell over 20 times as long as broad, with a single line of setae dorsally in its distal one-third; marginal vein about three times as long as broad, nearly twice as long as stigmal which is about as long as postmarginal. Hindwing very slightly suffused brownish as in forewing, about two-thirds length of forewing, about five times as long as broad with marginal fringe about half as long as maximum wing width. Mid tibial spur about as long as or a little shorter than basal mid tarsal segment.

*Gaster*. A little longer than thorax with apex of hypopygium reaching to about two-thirds along gaster; ovipositor not or hardly exerted; cercal plates situated about half way along gaster; paratergites absent; last tergite about three-quarters as long as mid tibia; ovipositor about as long as mid tibia, gonostyli free, about one-fifth as long as ovipositor.

♂. Unknown.

COMMENTS. We are unable to place this genus according to Trjapitzin's (1973*b*) classification of the Encyrtinae. However, it does bear some resemblance to *Forcipetricis* Burks and the two may be related, although the present genus lacks the pits on the scutellum which are so characteristic of *Forcipetricis*.

### *Haligra concolor* sp. n.

(Figs 253, 254, 340–345)

♀. Length: approx. 0.78–0.87 mm (holotype, 0.87 mm).

*Colour*. Body generally very dark brown or black; head quite shiny, antenna dark brown; mesoscutum slightly shiny, scutellum matt except the almost vertical apical surface which is completely smooth and shiny, legs dark brown with apices of fore tibia, mid tibia, hind femur and tibia and fore and hind tarsi testaceous, apical three-quarters of mid tibia and tarsus testaceous-yellow; gaster with some slight brassy reflections.

*Head*. Relative measurements (holotype): head length 52, head width (facial view) 53, head width (side view) 30, minimum width of frontovertex 17.5, malar space 20, eye length 34, eye width 26, POL 9, OOL 3, scape length 26, scape width 5.5, proportions of antenna as in Fig. 253, mandible as in Fig. 341.

*Thorax*. Sculpture of mesoscutum as in Fig. 340, of scutellum as in Fig. 254. Relative measurements (holotype): forewing length 130, width 51, other proportions of forewing as in Figs 342, 344; hindwing length 92, width 18. The paratype has the forewing nearly three times as long as broad and the postmarginal vein on right wing a little longer than stigmal, whilst on left wing it is a little shorter.

*Gaster*. Relative lengths (paratype): last tergite 45, ovipositor 64, [mid tibia 63]; genitalia as in Fig. 345, hypopygium as in Fig. 343.

♂. Unknown.

DISTRIBUTION. India.

BIOLOGY. Unknown.

#### MATERIAL EXAMINED

Holotype ♀, **India**: Uttar Pradesh, Aligarh, 11.ii.1979, on grass (*M. Hayat*) (BMNH).

Paratype. **India**: 1 ♀, Uttar Pradesh, Aligarh, 11.ii.1978, on grass (*M. Hayat*) (HC).

### *HAMBLETONIA* Compere

(Key couplet: 122. Figs 62–64)

*Hambletonia* Compere, 1936a: 172. Type-species: *Hambletonia pseudococcina* Compere, by original designation.

**DISTRIBUTION AND SPECIES.** One species, New World; also Hawaiian Is. and Taiwan: *pseudococcina* Compere (1936a: 173).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** Placed in the tribe Chrysoplatycerini, subtribe Chrysoplatycerina (Trjapitzin & Gordh, 1978b: 648), although it might possibly be more closely related to *Taftia* (subtribe Taftiina). It can be easily recognised by the conspicuous long setae arising from the dorsal surface of the pedicel.

### **HAMUSENCYRTUS** Subba Rao & Hayat

(Key couplets: 84, 170. Figs 38, 39, 92, 346)

*Hamusencyrtus* Subba Rao & Hayat, 1979: 2. Type-species: *Scelioencyrtus mymaricoides* Compere, Subba Rao & Kaur, by original designation.

*Neoxanthoencyrtus* Avasthi & Shafee, 1980: 535. Type-species: *Scelioencyrtus mymaricoides* Compere, Subba Rao & Kaur, by original designation.

**DISTRIBUTION AND SPECIES.** Two species, possibly synonymous, India and Pakistan only: *indicus* (Shafee, Alam & Agarwal, 1975: 33) (India) and *mymaricoides* (Compere, Subba Rao & Kaur, 1960: 46) (India, Pakistan), also further undetermined material, possibly including undescribed species, from India (BMNH, HC).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** The genus can be placed in the tribe Anagyrini, subtribe Rhopina (Tetracneminae) and is possibly closest to *Asitus*. It can be distinguished from this genus by having a two-segmented clava (solid in *Asitus*), distinct axillae (fused with scutellum in *Asitus*) and forewing venation not quite reaching anterior margin of wing (reaches anterior margin in *Asitus*).

### **HELEGONATOPUS** Perkins

(Key couplets: 283, 337)

*Helegonatopus* Perkins, 1906: 257. Type-species: *Helegonatopus pseudophanes* Perkins, by monotypy.

*Chalcerinys* Perkins, 1906: 258. Type-species: *Chalcerinys eximia* Perkins, by monotypy. **Syn. n.**

*Schedioides* Mercet, 1919a: 96. Type-species: *Schedioides formosus* Mercet, by monotypy.

*Euchalcerinys* Timberlake, 1922a: 161. Type-species: *Euchalcerinys apicicornis* Timberlake, by original designation. **Syn. n.**

*Hazmburkia* Hoffer, 1954: 172. Type-species: *Hazmburkia dimorpha* Hoffer, by original designation.

*Masencyrtus* Hoffer, 1960: 98. Type-species: *Masencyrtus concupiens* Hoffer, by original designation.

*Paludencyrtus* Hoffer, 1965: 16. Type-species: *Paludencyrtus nikolskajae* Hoffer, by original designation.

**DISTRIBUTION AND SPECIES.** Fifteen species, cosmopolitan; five species from review area: *apicicornis* (Timberlake, 1922a: 165) (**comb. n.** from *Euchalcerinys*) (Hawaiian Is.), *eximius* (Perkins, 1906: 259) (**comb. n.** from *Chalcerinys*) (Hawaiian Is.), *ponomarenkoi* Trjapitzin (1964a: 143) (India), *pseudophanes* Perkins (1906: 258) (Hawaiian Is.) and *pulchricornis* Hayat & Verma (1978: 355) (India), also undetermined material from Java (BPBM).

**REFERENCE.** Szelenyi (1972b: 348–352).

**BIOLOGY.** Hyperparasites of Auchenorrhyncha (Homoptera) via Dryinidae (Hymenoptera).

**COMMENTS.** We have examined one female and one male of what are probably syntypes of *Chalcerinys eximia* Perkins (BMNH); they are close to, if not the same as *pulchricornis* and therefore we propose the synonymy of *Chalcerinys* and *Helegonatopus*. We favour use of *Helegonatopus* as the valid generic name since it is the better known of the two, although *Chalcerinys* is the type-genus of the tribe Chalcerinyini.

We have also examined the holotype of *Euchalcerinys apicicornis* Timberlake (BPBM) and are confident that it also belongs in the genus *Helegonatopus*.

The genus belongs in the tribe Chalcerinyini (Encyrtinae).

**HEMILEUCOCERUS** Hoffer

(Key couplet: 294)

*Hemileucocerus* Hoffer, 1976: 101. Type-species: *Hemileucocerus insignis* Hoffer, by original designation.

DISTRIBUTION AND SPECIES. Only one described species known, Europe; at least two further species from India, Laos and Borneo (BMNH, HC, BPBM).

BIOLOGY. Unknown.

COMMENTS. We have not seen any material authoritatively determined as *Hemileucocerus insignis* Hoffer, but material examined from the Canary Is. (BMNH) agrees well with Hoffer's generic description. This material is congeneric with that from India, Laos and Borneo.

*Hemileucocerus* belongs in the same group as *Aseirba* and *Austroencyrtus* and can be separated from these genera by the characters given in the key (see also comments under *Aseirba*).

**HENGATA** gen. n.

(Key couplet: 307. Figs 154, 347–354)

Type-species: *Hengata spinosa* sp. n. Gender: feminine.

♀. *Head*. In facial view about as long as broad, in profile about twice as long as broad, anteriorly more or less evenly and gradually curved, the lower part of the interantennal prominence quite clearly visible. Eye with posterior margin a little concave, about one-half longer than broad, covered with numerous, fairly inconspicuous translucent setae, each nearly as long as the diameter of a facet, eye very slightly overreaching occipital margin which is sharp. Malar space about half length of eye, with sulcus present. Frontovortex about two-fifths head width; ocelli forming a right angle, the posterior ones separated from eye or occipital margin by a little less than their own diameters. Antennal scrobes shallow and semicircular, meeting dorsally and extending slightly more than half way from toruli to anterior ocellus; antennal torulus separated from mouth margin and other torulus by about one and a half times its own length, its dorsal margin a little above the ventral margin of eyes, clypeal margin shallowly excised below toruli. Antennal scape longer than minimum width of frontovortex, almost cylindrical, about five times as long as broad; pedicel conical about one-third length of scape and slightly longer than any funicle segment, all of which are subequal and a little longer than broad; clava three-segmented, the sutures subparallel, its apex more or less pointed; longitudinal sensillae on all flagellar segments; longest setae about as long as diameter of corresponding segment. Frontovortex almost smooth, but with extremely shallow, raised, regular, reticulate sculpture, much more elongate and irregular between antennal scrobes and eyes and on genae and temples; frontovortex and interantennal prominence with a few moderately long, dark setae; genae and clypeal margin with translucent setae. Mandible with two teeth and a truncation; maxillary palpus four-segmented, labial palpus three-segmented.

*Thorax*. In side view robust with mesoscutum and scutellum fairly convex, the mesopleurum posteriorly enlarged and touching basal segment of gaster, thus clearly separating the propodeum and metapleurum from the hind coxa. In dorsal view pronotum with posterior margin broadly concave; visible part of mesoscutum nearly twice as broad as long, broadly concave, notaular lines absent, a very shallow median longitudinal ridge in posterior half, posterior margin clearly convex and projecting above axillae medially; axillae separated by about two-thirds width of an axilla in dorsal view; scutellum convex, about as broad as long and about as long as mesoscutum, its apex rounded; propodeum medially not more than about one-tenth length of scutellum, laterally with only two or three setae to the outside of the spiracle. Mesoscutum with very shallow, raised, squamiform-reticulate sculpture, becoming more shallow posteriorly, scutellum anteriorly, and axillae with extremely shallow, raised, reticulate sculpture, posterior half or so of scutellum completely smooth; propodeum almost completely smooth; dorsum of thorax clothed in sparse, moderately long, conspicuous, dark setae. Forewing hyaline, about two and one-half times as long as broad; lineae calva not interrupted and open; filum spinosum present; submarginal vein with an apical hyaline break, with parastigma not conspicuously swollen; costal cell nearly 15 times as long as broad, with a single line of setae dorsally in its apical one-third or so; marginal vein about twice as long as broad, subequal to stigmal and postmarginal veins. Hindwing about two-thirds length of forewing, about four and one-half times as long as broad, with marginal fringe about one-quarter as long as maximum wing width. Mid tibial spur a little shorter than basal mid tarsal segment.

*Gaster*. Slightly longer than thorax; cercal plates at about midway along its length; hypopygium with its apex reaching to nearly two-thirds along gaster; paratergites absent; last tergite about half as long as mid tibia; ovipositor hardly exerted, a little shorter than mid tibia, gonostyli free, about one-quarter length of ovipositor.

♂. Similar to female except body generally darker, antenna and genitalia. Differs as follows. Head clearly broader than long; malar space nearly two-thirds as long as eye; frontovertex nearly half as wide as head; posterior ocelli a little further from eye margin than from occipital margin; antennal scape about as long as width of frontovertex with a very large thorn-like process arising from its ventral margin, from the apex of which is a strong, apically hooked bristle, scape thus only about twice as long as greatest width, pedicel conical, subquadrate, about as long as first funicle segment but clearly shorter than those following which are all longer than broad and subequal, clava entire; longitudinal sensillae on all flagellar segments except the first two, longest setae on funicle very nearly twice as long as diameter of segments. Forewing with costal cell about 12 times as long as broad, with marginal, stigmal and postmarginal veins proportionately a little shorter than in female. Genitalia with aedeagus about half as long as mid tibia, digiti each armed with one apical hook, about one-sixth length of aedeagus.

COMMENTS. The expanded mesopleurum, structure of the mandible, and mesoscutum dorsally separating the axillae indicate that this genus is related to *Ooencyrtus* and *Fulgoridicida* (Microteriyini, Ooencyrtina), also *Amira* (Amirini). It can be separated from these and all other genera by the shallow but distinct median longitudinal ridge or carina on the mesoscutum. The peculiar thorn-like process on the scape of the male is also another distinguished character.

### *Hengata spinosa* sp. n.

(Figs 154, 347–354)

♀. Length: 0.71–0.95 mm (holotype, 0.95 mm).

*Colour*. Body generally pale brownish yellow; frontovertex a little darker, with greenish reflections, clypeus dark brown; scape yellow, pedicel and flagellum brown, clava white; face of pronotum, mesoscutum anteriorly, scutellum in posterior half, mesopleurum posteriorly, propodeum and apical half of gaster, dark brown, the posterior half of scutellum with a slight greenish or purplish sheen; legs yellow, mid coxa brown; base of gaster and proximal half of venter yellowish. In some specimens the darker brown areas are less intense or less extensive and occasionally the propodeum is yellowish; occasionally the base of the hind coxa is dark brown.

*Head*. Relative measurements (holotype): head length 56, head width (facial view) 57, head width (side view) 26, minimum width of frontovertex 21, malar space 20, eye length 37, eye width 25, POL 9, OOL 3, scape length 33, scape width 6, other proportions of antenna as in Fig. 348; mandible as in Fig. 347.

*Thorax*. Relative measurements (holotype): forewing length 147, width 58, hindwing length 98, width 22. Base of forewing as in Fig. 154, venation as in Fig. 349.

*Gaster*. Relative lengths (paratype): last tergite 43, ovipositor 75, [mid tibia 87]; genitalia as in Fig. 351, hypopygium as in Fig. 350.

♂. Length: 0.71–0.94 mm. Similar to female except following. Body completely dark brown, legs and gaster as in female. Antenna as in Fig. 352; genitalia as in Figs 353, 354. Relative measurements (paratype 1): head width 74, minimum frontovertex width 33, scape length 31, forewing length 172, forewing width 73, hindwing length 114, hindwing width 28, mid tibia length 70, aedeagus length 32; relative measurements (paratype 2): scape length 20, scape width (to apex of thorn-like process) 10, POL 9.5, OOL 3. (Paratype 1 on a slide; paratype 2 dry-mounted on a card.)

DISTRIBUTION. Indonesia (Sulawesi).

BIOLOGY. Unknown.

#### MATERIAL EXAMINED

Holotype ♀, **Indonesia**: Sulawesi, Tengah, Ranu River area, nr Morowali, ii.1980, lowland rain forest, Malaise trap (*M. J. D. Brendell*) (BMNH).

Paratypes. **Indonesia**: 4 ♀, 6 ♂, same data as holotype; 4 ♀, 4 ♂, same data as holotype but iii.1980; 10 ♀, 11 ♂, same data as holotype but 27.i.–20.iv.1980 (*M. J. D. Brendell*) (BMNH, USNM, UCR, ZI, PPRI, HC).

**HESPERENCYRTUS** Annecke

(Key couplet: 136)

*Hesperencyrtus* Annecke, 1971a: 86. Type-species: *Paraphaenodiscus lycoeniphila* Risbec, by original designation.

DISTRIBUTION AND SPECIES. One species known, Afrotropical; also reported from India: *lycoeniphila* (Risbec, 1951: 147).

BIOLOGY. Parasites of the pupae of Lycaenidae (Lepidoptera).

COMMENTS. The material referred to by Hayat & Subba Rao (1981: 113) should be in the collections of the BMNH. We have been unable to locate it and therefore it must be assumed that this material was originally misidentified or has been lost.

The genus belongs in the tribe Microteriyini and probably the subtribe Microteriyina (Encyrtinae).

**HETEROCOCCIDOXENUS** Ishii

(Key couplets: 280, 419. Fig. 172)

*Heterococcidoxenus* Ishii, 1940: 103. Type-species: *Heterococcidoxenus javensis* Ishii, by original designation.

*Microsphenus* Kerrich, 1963: 365. Type-species: *Bothriothorax schlechtendali* Mayr, by original designation.

DISTRIBUTION AND SPECIES. Two species, Palaearctic and Australasian; one from review area: *javensis* Ishii (1940: 103) (Java).

BIOLOGY. Parasites of Scolytidae (Coleoptera).

COMMENTS. Placed in the tribe Bothriothoracini, subtribe Bothriothoracina (Encyrtinae).

**HEXENCYRTUS** Girault

(Key couplets: 222, 290)

*Hexencyrtus* Girault, 1915a: 105. Type-species: *Hexencyrtus albiclava* Girault, by original designation.

*Calliencyrtus* De Santis, 1960: 61. Type-species: *Calliencyrtus bucculentus* De Santis, by original designation. **Syn. n.**

DISTRIBUTION AND SPECIES. Two species, Neotropical, Oriental and Australasian; one from review area: *albiclava* Girault (1915a: 105) (= *Hexencyrtus fumosipennis* Girault, 1915a: 106 **syn. n.**), also further undetermined material from Vietnam and Papua New Guinea (BPBM).

BIOLOGY. Unknown.

COMMENTS. We have compared a specimen of *Hexencyrtus albiclava* (compared with holotype) with a specimen determined as *Calliencyrtus bucculentus* by De Santis. They are very close and certainly belong in the same genus.

The genus is difficult to place according to Trjapitzin's (1973b) classification of the Encyrtinae, but it almost certainly belongs to the same generic group as *Parastenoterys* and *Rhytidothorax* (see also comments under *Parastenoterys*).

**HOLANUSOMYIA** Girault

(Key couplet: 158. Figs 83, 355, 356)

*Holanusomyia* Girault, 1915c: 165. Type-species: *Holanusomyia pulchripennis* Girault, by original designation.

DISTRIBUTION AND SPECIES. One species, Philippines only: *pulchripennis* Girault (1915c: 165).

BIOLOGY. Unknown.

COMMENTS. The genus is related to *Yasumatsuia* which is placed in the tribe Dinocarsiini (Trjapitzin, 1977: 155). It is easily recognised by the abnormally long stigmal vein of the forewing. We have seen other material from Taiwan (UCR, BPBM) which could possibly be placed in this genus but refrain from doing so until a more detailed study of the group, to which this genus belongs, can be undertaken.

### **HOLCOTHORAX** Mayr

(Key couplet: 67)

*Holcothorax* Mayr, 1876: 691. Type-species: *Encyrtus testaceipes* Ratzeburg, by designation of Gahan & Fagan (1923: 72).

DISTRIBUTION AND SPECIES. Two species, European; neither from review area, but one undescribed species from India (BMNH).

BIOLOGY. Polyembryonic parasites of the larvae of Gracillariidae and Nepticulidae (Lepidoptera).

COMMENTS. The species from India is intermediate between *Holcothorax* and *Paraleurocerus* Girault, having sculpture of the head and thorax similar to the latter, but with a five-segmented funicle. It is probable that these two genera and *Ageniaspis* will eventually be considered synonymous.

*Holcothorax* is placed in the tribe Copidosomatini, subtribe Ageniaspidina (see comments under *Ageniaspis*).

### **HOMALOPODA** Howard

(Key couplet: 54)

*Homalopoda* Howard in Riley, Ashmead & Howard, 1894: 90. Type-species: *Homalopoda cristata* Howard, by monotypy.

DISTRIBUTION AND SPECIES. One described species from the Neotropics, Sri Lanka and the Hawaiian Is.: *cristata* Howard; Noyes (1979: 157), also undetermined material from Java (BMNH).

BIOLOGY. Parasites of Diaspididae (Homoptera).

COMMENTS. We have not examined any of the material determined as *cristata* from either Sri Lanka or the Hawaiian Is. and therefore cannot confirm its identity.

The genus belongs to the tribe Habrolepidini, subtribe Habrolepidina.

### **HOMALOTYLUS** Mayr

(Key couplets: 34, 239, 354, 388. Figs 6, 146, 198)

*Homalotylus* Mayr, 1876: 752. Type-species: *Encyrtus flaminus* Dalman, by designation of Ashmead (1900b: 377).

*Nobrimus* Thomson, 1876: 116. Type-species: *Encyrtus flaminus* Dalman, by designation of Timberlake (1919a: 134).

*Mendozaniella* Brèthes, 1913: 97. Type-species: *Mendozaniella mirabilis* Brèthes, by monotypy.

*Hemaenasioidea* Girault, 1916c: 307. Type-species: *Hemaenasioidea oculata* Girault, by monotypy.

*Anisotylus* Timberlake, 1919a: 170. Type-species: *Homalotylus similis* Ashmead, by original designation.

#### **Syn. n.**

*Lepidaphycus* Blanchard, 1936: 13. Type-species: *Lepidaphycus bosqi* Blanchard, by monotypy.

*Neoaenasioidea* Agarwal, 1966: 71. Type-species: *Neoaenasioidea indica* Agarwal, by original designation.

DISTRIBUTION AND SPECIES. Twenty-eight species, cosmopolitan; 12 species from review area: *albiclavatus* (Agarwal, 1970: 27) (India), *ferrierei* Hayat, Alam & Agarwal (1975: 67) (India),

*flaminius* (Dalman, 1820: 340) (India, S. China, Java, Australia), *indicus* (Agarwal, 1966: 73) (India), *mexicanus* Timberlake (1919a: 155) (India), *microgaster* Girault (1917g: 134) (Australia), *mundus* Gahan (1920: 343) (Philippines), *nigrilus* (Agarwal, 1970: 27) (India), *nipaecocci* (Subba Rao, 1967: 1) (India), *oculatus* (Girault, 1916b: 308) (Philippines), *orci* Girault (1917a: 3) (Java), *terminalis* (Say; Timberlake, 1919a: 148) (India), also much undetermined material from throughout the region (BMNH, BPBM, GC, HC).

REFERENCES. Revision: Timberlake (1919a: 133–170); review of Indian species: Hayat *et al.* (1975: 64–69).

BIOLOGY. Parasites of coccinellid larvae (Coleoptera, Coccinellidae).

COMMENTS. We do not believe that the retention of *Anisotylus* as a valid genus is realistic; at most, the characters used to separate it from *Homalotylus* (bidentate mandible and venation) can be considered as valid only on a specific or perhaps species-group level but certainly not at generic level. This proposal is further supported by the fact that, where known, all species of *Anisotylus* are parasitic on coccinellid larvae.

Timberlake (1919a: 141) synonymised both *orci* and *microgaster* with *flaminius*. Mr P. B. Jensen (pers. comm.) has studied the type of *flaminius* and informed us that the species may have been misinterpreted. For this reason we are maintaining these species as distinct until the matter can be resolved.

The genus is placed in the tribe Homalotylini, subtribe Homalotyliina (see also comments under *Aphycus*).

### **HUNTERELLUS** Howard

(Key couplets: 81, 152, 214)

*Hunterellus* Howard, 1908: 240. Type-species: *Hunterellus hookeri* Howard, by monotypy.

*Australzaomma* Girault, 1925b: 97. Type-species: *Australzaomma brunnea* Girault, by monotypy. **Syn. n.**

DISTRIBUTION AND SPECIES. Five species, cosmopolitan; four from review area: *brunneus* (Girault, 1925b: 96) (**comb. n.** from *Australzaomma*) (Australia), *hookeri* Howard (1908: 241) (India, Malaysia, Hawaiian Is.), *mysorensis* (Mani, 1941: 29) (**comb. n.** from *Ixodiphagus*) (India) and *sagarensis* Geevarghese (1977: 49) (India).

BIOLOGY. Parasites of nymphs of Ixodidae (Acarina).

COMMENTS. We have not examined the type of *Ixodiphagus mysorensis* but it would seem reasonable to assume from the description and distribution that it is a species of *Hunterellus*.

The genus belongs to the tribe Ixodiphagini (Encyrtinae).

### **HYPERGONATOPUS** Timberlake

(Key couplets: 90, 474, 485. Figs 42, 43, 226)

*Hypergonatopus* Timberlake, 1922a: 142. Type-species: *Echthrogonatopus hawaiiensis* Perkins, by original designation.

*Aulonops* Timberlake, 1922a: 158. Type-species: *Aulonops bifasciata* Timberlake, by original designation. **Syn. n.**

DISTRIBUTION AND SPECIES. Eight species, all from Hawaiian Is.: *bifasciatus* (Timberlake, 1922a: 159) (**comb. n.** from *Aulonops*), *brunneipes* Timberlake (1922a: 154), *flavipes* Timberlake (1922a: 155), *hawaiiensis* (Perkins, 1912: 17), *hemipterus* Timberlake (1922a: 157), *molokaiensis* (Ashmead, 1901: 322), *oahuensis* Timberlake (1922a: 153) and *vulcanus* Timberlake (1922a: 152).

REFERENCE. Revision: Timberlake (1922a: 142–161).

BIOLOGY. Hyperparasites of Auchenorrhyncha (Homoptera) via Dryinidae (Hymenoptera).

COMMENTS. We have examined the holotype of *Aulonops bifasciata* (BPBM) and conclude that it must be regarded as belonging to the genus *Hypergonatopus*.

The genus is placed in the tribe Chalcerinyini by Trjapitzin (1973b) but we think it would probably be better placed in the Cheiloneurini. It is possible that future study will show that the Chalcerinyini could be considered as a subtribe within the Cheiloneurini.

### **INDAPHYCUS** Hayat

(Key couplet: 62. Figs 24, 357)

*Indaphycus* Hayat, 1981b: 20. Type-species: *Indaphycus planus* Hayat, by original designation.

DISTRIBUTION AND SPECIES. One species, India only: *planus* Hayat (1981b: 21).

BIOLOGY. Unknown.

COMMENTS. It is possible that *Pseudectroma bryanti* Girault will run to *Indaphycus* in the key since this species may have a solid clava. It will probably be possible to determine its correct generic placement only when fresh material is available for study.

The genus is apparently close to *Acerophagus* and *Pseudectroma* (tribe Aphycini, subtribe Aphycina) from which it can be separated using the characters given in the key, notably by the elongate pronotum.

### **ISODROMOIDES** Girault

(Key couplets: 453, 472)

*Isodromoides* Girault, 1914a: 30. Type-species: *Isodromoides triangularis* Girault, by original designation.

*Neocopidosomyia* Girault, 1915a: 95. Type-species: *Neocopidosomyia viridiscutellum* Girault, by original designation. **Syn. n.**

DISTRIBUTION AND SPECIES. One species, Australia only: *triangularis* Girault (1914a: 30) (= *Neocopidosomyia viridiscutellum* Girault, 1915a: 95 **syn. n.**), also at least one further species from Australia (BMNH).

BIOLOGY. Hyperparasites of Epipyropidae (Lepidoptera) parasitic on Fulgoridae (Homoptera).

COMMENTS. The genus appears to be related to *Ooencyrtus* (tribe Microterytini, subtribe Oencyrtina) from which it can be separated by having a solid clava (that of *Ooencyrtus* is three-segmented).

### **ISODROMUS** Howard

(Key couplet: 389. Figs 200, 201)

*Isodromus* Howard, 1887: 488. Type-species: *Isodromus iceryae* Howard, by monotypy.

*Parataneostigma* Girault, 1915d: 275. Type-species: *Parataneostigma nigriaxillae* Girault, by monotypy.

DISTRIBUTION AND SPECIES. Fourteen species, cosmopolitan; one species from review area: *axillaris* Timberlake (1919b: 185) (China, Hawaiian Is.), also undetermined material from Pakistan, Philippines and Australia (BMNH, BPBM).

REFERENCE. Revision: Timberlake (1919b: 176–190).

BIOLOGY. Parasites of larvae of Chrysopidae and Hemerobiidae (Neuroptera).

COMMENTS. Placed in the tribe Homalotylini, subtribe Homalotyline (see also comments under *Aphycus*).

### **KAKAOBURRA** Girault

(Key couplet: 319)

*Kakaoburra* Girault, 1922a: 44. Type-species: *Kakaoburra fera* Girault, by monotypy.

DISTRIBUTION AND SPECIES. Australia only, two described species: *angeliconini* (Girault, 1924a: 6) (**comb. n.** from *Echthrocacca*) and *fera* Girault (1922a: 44), also possibly two further species from Australia and New Zealand (BMNH, DSIR).

BIOLOGY. Unknown.

COMMENTS. The single extant syntype (probably the holotype) of *Kakaoburra fera* is in very poor condition (QM); fragments of the head and one forewing on a slide and legs on a card are all that remain. However, the wing venation, arrangement of the setae in the basal cell and relatively short scape are very characteristic and we believe that we have interpreted the genus correctly by assigning *angeliconini* to it.

*Kakaoburra*, as we understand it, is probably very close to *Mayridia* (subtribe Mayridiina) which Trjapitzin (1973b) has incorrectly placed in the tribe Miraini (see comments under *Ectroma*, *Mira* and *Mayridia*).

### KATAKA gen. n.

(Key couplets: 223, 319. Figs 132, 358–367)

Type-species: *Kataka mudigerensis* sp. n. Gender: feminine.

♀. *Head*. In facial view (Fig. 358) about one-fifth broader than long, in profile slightly more than one and one-half times as long as broad and anteriorly more or less gradually and evenly curved although slightly flatter from top of scrobes to lowest level of toruli. Eye with posterior margin straight, about one-half longer than broad, much shorter than minimum width of frontovertex; naked and separated from occipital margin by at least about the diameter of an ocellus; occipital margin rounded. Malar space about three-quarters as long as eye, with sulcus present although not well marked. Frontovertex slightly less than two-thirds head width; ocelli forming an obtuse angle of about 120–130° the posterior ones about equidistant from eye and occipital margin. Antennal scrobes very shallow, semicircular, meeting dorsally, reaching slightly less than half way from antennal torulus to anterior ocellus; antennal torulus separated from mouth margin by nearly twice its own length and from other torulus by about one-quarter more than its own length, its lowest margin a little below lowest eye margin; clypeal margin shallowly but broadly excised below toruli. Antennal scape about two-thirds as long as minimum width of frontovertex and about four times as long as broad; pedicel conical, about half length of scape and a little longer than any funicle segment, all of which are longer than broad, the first the longest and sixth shortest; clava three-segmented, apically rounded with sutures parallel and about one-third length of funicle; longitudinal sensillae on all flagellar segments, longest setae slightly shorter than diameter of corresponding segment. Sculpture on frontovertex shallow, raised reticulate, fairly regular and almost hexagonal, on cheeks and between toruli and eyes more elongate and tending towards squamiform-reticulate; setae on frontovertex and genae fairly numerous, dark and short, each not longer than about the diameter of an ocellus. Mandible with two teeth and a truncation or obscurely tridentate with upper tooth broadly rounded; maxillary palpus four-segmented, labial palpus three-segmented.

*Thorax*. In side view moderately robust with mesoscutum and scutellum flat, the hind margin of the mesopleurum clearly separating the hind coxa from the metapleurum and propodeum and more or less in contact with basal gastral segment (Fig. 361). In dorsal view with posterior margin of pronotum moderately concave; visible part of mesoscutum about one-half broader than long, with notaular lines absent, its posterior margin slightly concave medially; axillae meeting, scutellum a little broader than long and a little longer than mesoscutum with apex acute; propodeum medially about one-seventh as long as scutellum and medially with some shallow, irregular, reticulate sculpture. Dorsum of thorax with fairly regular, shallow, raised, almost hexagonal sculpture, covered in numerous, conspicuous dark brown setae. Forewing more or less hyaline but almost imperceptibly infused pale brown, about three times as long as broad; linea calva not interrupted but closed near posterior margin of wing by two lines of setae; filum spinosum present; submarginal vein without an apical hyaline break, parastigma not thickened; costal cell about 10 times as long as broad, with one or two lines of setae dorsally along its entire length; marginal vein about four times as long as broad, a little longer than stigmal and at least twice as long as postmarginal. Hindwing about two-thirds as long as forewing and about five times as long as broad, marginal fringe about one-third as long as wing width. Mid tibial spur a little longer than basal mid tarsal segment.

*Gaster*. A little shorter than thorax; cercal plates in basal half; hypopygium with apex reaching to about four-fifths along gaster, clothed in very long setae apically; paratergites absent; last tergite a little shorter

than two-thirds mid tibia; ovipositor slightly shorter than mid tibia, gonostyli free, about one-sixth as long as ovipositor.

♂. Very similar to female but differs as follows. Antennal scrobes very shallow, almost non-existent; antennal toruli a little higher on head, their lowest margins about level with lowest eye margins; antennal scape less than two-thirds as long as minimum width of frontovertex, about three and one-half times as long as broad, pedicel about as long as each funicle segment all of which are clearly longer than broad; clava entire, about twice as long as a funicle segment; longest setae on flagellum about as long as diameter of segments. Forewing with linea calva open or closed by a single line of setae on dorsal surface. Genitalia with aedeagus about half as long as mid tibia, digiti each with apical hook and about one-seventh as long as aedeagus.

COMMENTS. The relatively high placement of the antennal toruli, rounded occipital margin, wing venation and flattened thoracic dorsum indicate that this genus may be related to *Mayridia* (see comments under *Mayridia*). It can be separated from this genus in having the setae on the dorsal surface of the forewing extending to the base, the mandible having the third (upper) tooth more or less truncate, relatively smaller eyes and posteriorly enlarged mesopleurum (in profile, the hind coxa is in contact with the propodeum in *Mayridia*).

***Kataka mudigerensis* sp. n.**

(Figs 132, 358–367)

♀. Length: 0.98–1.22 mm (holotype, 1.22 mm).

*Colour.* Head, dorsum of thorax and gaster black with some slight green, brassy and purple reflections on head, purple reflections on mesoscutum, axillae and basal two-thirds or so of scutellum; apical one-third or so of scutellum green, gaster basally with a metallic green sheen, strongly coppery-purple over remainder; antennal scape, mesopleurum and legs yellowish orange, antennal pedicel and flagellum brown.

*Head.* Facial view as in Fig. 358. Relative measurements (holotype): head length 58, head width (facial view) 69, head width (side view) 35, minimum frontovertex width 40, malar space 25, eye length 33, eye width 22, POL 22, OOL 8, scape length 30, scape width 8, other proportions of antenna as in Fig. 359, mandible as in Fig. 360.

*Thorax.* Relative measurements (holotype): forewing length 170, width 61, proportions of veins as in Figs 132, 362; hindwing length 119, width 24. Basal cell of forewing with setae to base and nearly twice as dense as in distal half of wing; propodeum with 10–12 very long translucent setae immediately outside each spiracle, each seta about twice as long as diameter of spiracle.

*Gaster.* Relative lengths (paratype): last tergite 23, ovipositor 31.5, gonostyli 4.5, [mid tibia 38]; genitalia as in Fig. 364, hypopygium as in Fig. 363.

♂. Length: 0.89–0.92 mm. Generally similar to female except for antenna (Fig. 367) and genitalia (Figs 365, 366). Relative measurements (paratype): scape length 33, scape width 10, minimum width of frontovertex 48, length of mid tibia 89, length of aedeagus 40.

DISTRIBUTION. India.

BIOLOGY. Unknown.

MATERIAL EXAMINED

Holotype ♀, **India:** Karnataka, Mudigere, 26.x–4.xi.1979 (*J. S. Noyes*) (BMNH).

Paratypes. **India:** 4 ♀, 3 ♂, same data as holotype (BMNH).

***LAKSHAPHAGUS* Mahdihassan**

(Key couplet: 97. Figs 46, 77, 368)

*Lakshaphagus* Mahdihassan, 1931: 170. Type-species: *Microterys hautefeulli* Mahdihassan, by original designation.

*Cheilonicetus* Shafee, Alam & Agarwal, 1975: 55. Type-species: *Cheilonicetus daulai* Shafee, Alam & Agarwal, by original designation.

DISTRIBUTION AND SPECIES. Three species, all from India: *daulai* (Shafee, Alam & Agarwal, 1975: 58), *fusiscapus* (Agarwal, 1965: 63) and *hautefeuilli* (Mahdihassan; Hayat, 1981: 22).

REFERENCE. Review: Hayat (1981b: 21–23).

BIOLOGY. Parasites of Asterolecaniidae and Keriidae (Homoptera).

COMMENTS. The genus is superficially very similar to *Atropates* Howard and *Anisophleps* Fidalgo. It can be separated from *Atropates* using the characters provided by Hayat (1981b), and from *Anisophleps* by the following: forewing lacking subapical fuscous band, mesoscutum lacking posterior depression, whereas in *Anisophleps* the forewing has a subapical fuscous band and the mesoscutum has a transverse posterior depression as in *Diversinervus*.

*Lakshaphagus* is probably close to *Cerapterocerus* (tribe Cerapterocerini) from which it differs in lacking a flattened flagellum and weaker, less well-defined infusate pattern of the forewing.

### LAMENNAISIA Girault

(Key couplets: 322, 532. Fig. 188)

*Lamennaisia* Girault, 1922a: 40. Type-species: *Lamennaisia quadridentata* Girault, by monotypy.

*Mercetencyrtus* Trjapitzin, 1963: 886. Type-species: *Encyrtus ambiguus* Nees, by original designation.

**Syn. n.**

*Sabirella* Agarwal, Agarwal & Khan, 1980: 30. Type-species: *Sabirella indica* Agarwal, Agarwal & Khan, by original designation. **Syn. n.**

DISTRIBUTION AND SPECIES. Four species, cosmopolitan; three from review area: *ambigua* (Nees; Mercet, 1921: 283) (**comb. n.** from *Encyrtus*) (India), *indica* (Agarwal, Agarwal & Khan, 1980: 30) (**comb. n.** from *Sabirella*) (India) and *quadridentata* Girault (1922a: 40) (Australia), also undetermined material from India and S. China to Australia, New Zealand and Hawaiian Is. (BMNH, BPBM, DSIR, HC).

BIOLOGY. Unknown, but possibly some of the New Zealand material was reared from larvae of Lathridiidae (Coleoptera).

COMMENTS. We are unable to place the genus according to Trjapitzin's (1973b) classification of the Encyrtinae.

### LEEFMANSIA Waterston

(Key couplet: 383)

*Leefmansia* Waterston, 1928b: 527. Type-species: *Leefmansia bicolor* Waterston, by original designation.

DISTRIBUTION AND SPECIES. One species only, Australasia: *bicolor* Waterston (1928b: 528) (Moluccas, Bismarck Archipelago, New Hebrides).

BIOLOGY. Parasites of eggs of Tettigoniidae (Orthoptera).

COMMENTS. The genus is superficially extremely similar to *Microterys*, but we believe that it should be treated as distinct. It can be separated from *Microterys* by the characters given in the key, notably the axillae being separated by the posterior margin of the mesoscutum. This character, together with the fact that the only included species is parasitic in the eggs of other insects, leads us to believe that the genus is more closely related to *Ooencyrtus* (Microterysiini, Ooencyrtina) than to *Microterys*.

### LEPTOMASTIDEA Mercet

(Key couplets: 149, 245, 276. Fig. 163)

*Leptomastidea* Mercet, 1916b: 112. Type-species: *Leptomastidea aurantiaca* Mercet, by monotypy.

*Tanaomastix* Timberlake, 1918: 362. Type-species: *Paraleptomastix abnormis* Girault, by original designation.

*Leptanusia* De Santis, 1964: 80. Type-species: *Leptomastidea pseudococci* Brèthes, by original designation.

**DISTRIBUTION AND SPECIES.** Seventeen species, cosmopolitan; two from review area: *abnormis* (Girault, 1915b: 184) (Hawaiian Is.) and *shafeei* Hayat & Subba Rao (1981: 114) (= *indica* Shafee, Alam & Agarwal, 1975: 24) (India), also at least four further species amongst undetermined material from India, Philippines and Australia (BMNH).

**REFERENCE.** Mercet (1924: 252–258).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** *Leptomastidea* is in the tribe Anagyrini, subtribe Anagyrina (= *Leptomastideina* **syn. n.**). The genus is very close to *Gyranusoidea* on one hand and *Leptomastix* on the other. It can be separated from *Gyranusoidea* by the sculpture of the head and thorax and the degree of infuscation of the forewing (see comments under *Gyranusoidea*), and from *Leptomastix* by its generally smaller size and relatively shorter funicle segments in relation to the pedicel (see also Kerrich, 1982: 402).

### **LEPTOMASTIX** Förster

(Key couplets: 230, 276. Figs 164, 168)

*Leptomastix* Förster, 1856: 34. Type-species: *Leptomastix histrio* Mayr, by subsequent reference of Mayr (1876: 730).

*Sterrhocoma* Förster, 1856: 36. Type-species: *Sterrhocoma histrio* Förster, by original designation.

*Stenoterys* Thomson, 1876: 115. Type-species: *Stenoterys orbitalis* Thomson, by monotypy.

**DISTRIBUTION AND SPECIES.** Thirty-three species, cosmopolitan; 13 from review area: *aligarhensis* Khan & Shafee (1975: 194) (India), *auraticorpus* Girault (1915a: 152) (Australia), *brevipediculus* Khan & Shafee (1975: 194) (India), *brevis* Hayat, Alam & Agarwal (1975: 14) (India), *dactylopii* Howard; Dozier (1927: 267) (Pakistan, India, Hawaiian Is.), *gunturiensis* Shafee ((1971: 49) (India), *longicornis* Khan & Shafee (1975: 195) (India), *longiscapus* Khan & Agarwal (1976: 378) (India), *nigritegulae* Girault (1915a: 153) (Australia), *nigrocoxalis* Compere (1928: 219) (India), *salemensis* Hayat, Alam & Agarwal (1975: 17) (India), *singularis* Shafee (1971: 50) (India) and *trilongifasciata* Girault (1916c: 479) (Java), also undetermined material, undoubtedly including several undescribed species, from India, Bangladesh, Laos, China, Java, Philippines and Papua New Guinea (BMNH, BPBM, RMNH, GC, HC).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** *Leptomastix* belongs to the tribe Anagyrini, subtribe Anagyrina and is most closely related to *Leptomastidea* and *Apoleptomastix*. It can be separated from these genera by the characters given in the key (see also Kerrich, 1982: 402).

### **LEUROCERUS** Crawford

(Key couplet: 112. Fig. 53)

*Leurocerus* Crawford, 1911: 276. Type-species: *Leurocerus ovivorus* Crawford, by original designation.

**DISTRIBUTION AND SPECIES.** Two species known, both from review area: *hongkongensis* Subba Rao (1971: 220) (S. China, Hong Kong) and *ovivorus* Crawford (1911: 277) (Philippines, Sumatra).

**BIOLOGY.** Parasites of eggs of Amathusiidae and Satyridae (Lepidoptera).

**COMMENTS.** The genus is placed in the tribe Microterytini, subtribe Ooencyrtina which may be correct, although it does appear to have some affinities with *Pentelicus* (see comments under *Pentelicus*), *Proleurocerus* (placed in the tribe Proleurocerini by Trjapitzin, 1973b), *Zozoros*,

*Paksimmondsius* and *Proleuroceroides*. It may be that these genera form a single group (or tribe), but it would require a further, more detailed morphological study to determine their true relationship. All these genera have similar forewing venation and a characteristic naked streak from the apex of the postmarginal vein to the apex of the stigmal vein (this character is also found in some genera of the Cerapterocerini and Cheiloneurini).

### **LUTHERISCA** Ghesquière

(Key couplets: 123, 483, 490. Figs 239, 240)

*Lutheria* Girault, 1919a: 166. Type-species: *Lutheria ajanea* Girault, by original designation. [Homonym of *Lutheria* Hofsten, 1907.]

*Lutherisca* Ghesquière, 1946: 369. [Replacement name for *Lutheria* Girault.]

DISTRIBUTION AND SPECIES. One species, Singapore and possibly Borneo: *ajanea* (Girault, 1919a: 167).

BIOLOGY. Unknown.

COMMENTS. The single, extant, syntype of *Lutheria ajanea* (BMNH) is here designated LECTOTYPE. It is lacking the head which presumably was put on a microscope slide by Girault and has since been lost. The specimen from Borneo (BPBM) is almost certainly conspecific, but differs slightly from the lectotype in colour and sculpture of the dorsum of the thorax.

The genus is closely related to *Taftia* (tribe Chrysoplatygerini, subtribe Taftiina) and can be separated from this genus by the characters given in the key, notably the relatively larger clava (Fig. 239).

### **MAHENCYRTUS** Masi

(Key couplets: 253, 304, 350, 417. Figs 147, 210)

*Mahencyrtus* Masi, 1917b: 157. Type-species: *Mahencyrtus occultans* Masi, by monotypy.

*Tyndarichoides* Mercet, 1921: 649. Type-species: *Tyndarichoides metallicus* Mercet, by original designation. [Homonym of *Tyndarichoides* Girault, 1920.] **Syn. n.**

*Protyndarichus* Mercet, 1923b: 479. [Replacement name for *Tyndarichoides* Mercet.] **Syn. n.**

DISTRIBUTION AND SPECIES. Five species, cosmopolitan; three from review area, all Australian: *aereifemur* (Girault, 1922e: 150) (**comb. n.** from *Echthrogonatopus*), *gracilis* (Girault, 1915a: 100) (**comb. n.** from *Zarhopaloides*) and *longifasciatipennis* (Girault, 1915a: 100) (**comb. n.** from *Zarhopaloides*), also further material, containing at least one undescribed species, from India, S. China, Hong Kong, Thailand, Malaysia, Java, Philippines and Australia (BMNH, BPBM).

BIOLOGY. Unknown.

COMMENTS. The holotype of *Mahencyrtus occultans* has been examined (BMNH). It is a typical male of the genus previously known as *Protyndarichus*. The genus has been synonymised with *Parechthrodryinus* by Trjapitzin & Gordh (1978a) but after studying material belonging to these two genera we believe that *Protyndarichus* and thus *Mahencyrtus* is a valid genus. It differs from *Parechthrodryinus* by the characters given in the key, but most notably by general body shape and also by the structure of the propodeum and scutellum. We propose the following transfers to *Mahencyrtus* for extra-limital species: *comara* Walker (from *Encyrtus*) and *nitidus* Howard (from *Encyrtus*) (both **comb. n.**).

The genus is placed in the tribe Cheiloneurini (Encyrtinae).

### **MANICNEMUS** Hayat

(Key couplet: 242. Figs 145, 369, 370)

*Manicnemus* Hayat, 1981b: 23. Type-species: *Tetralophidea indica* Mani & Saraswat, by original designation.

**DISTRIBUTION AND SPECIES.** Afrotropical, Oriental, Australasian; one described species: *indicus* (Mani & Saraswat; Hayat, 1981b: 24) (India), also undetermined material from S. China, Hong Kong, Indonesia, Irian Jaya and Bismarck Archipelago (BPBM).

**BIOLOGY.** Unknown.

**COMMENTS.** The genus belongs in the tribe Charitopidini (Tetracneminae) and can be separated from related genera by the strongly infusate forewings, relatively short marginal vein of the forewing and very transverse head in dorsal view.

### **MARXELLA** Girault

(Key couplet: 48)

*Marxella* Girault, 1932a: 6. Type-species: *Marxella richteri* Girault, by monotypy.

**DISTRIBUTION AND SPECIES.** One species, Australia only: *richteri* Girault (1932a: 6).

**BIOLOGY.** Unknown.

**COMMENTS.** The genus is very close to *Acerophagoides* and *Coccidoxenoides* (Tetracneminae, tribe Pauridiini) but differs in having a three-segmented funicle in the female, whereas the other genera have a five- and six-segmented funicle respectively.

### **MASHHOODIA** Shafee

(Key couplets: 266, 407. Fig. 159)

*Mashhoodia* Shafee, 1972: 159. Type-species: *Mashhoodia indica* Shafee, by original designation.

**DISTRIBUTION AND SPECIES.** One species, India only: *indica* Shafee (1972: 160).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** The genus belongs to the tribe Anagyrini, subtribe Anagyrina (Tetracneminae) and differs from other included genera in the characteristic venation of the forewing (more or less punctiform marginal vein and relatively long postmarginal and stigmal veins) and the patterns of light and dark setae on the forewing (Fig. 159).

### **MASHHOODIELLA** Hayat

(Key couplets: 257, 378. Fig. 194)

*Mashhoodiella* Hayat, 1972: 209. Type-species: *Mashhoodiella echthromorpha* Hayat, by original designation.

**DISTRIBUTION AND SPECIES.** One species, India only: *echthromorpha* Hayat (1972: 210).

**BIOLOGY.** Parasites of Coccidae (Homoptera).

**COMMENTS.** Placement of this genus is difficult but it should belong in the tribe Aphycini (Encyrtinae) and appears to have some characters in common with *Parablastothrix* (see comments under *Parablastothrix*).

### **MAYRIDIA** Mercet

(Key couplets: 191, 333, 435, 473)

*Mayridia* Mercet, 1921: 426. Type-species: *Mayridia pulchra* Mercet, by original designation.

*Superprionomitus* Mercet, 1921: 376. Type-species: *Superprionomitus procerus* Mercet, by original designation.

*Indoencyrtus* Hayat & Verma, 1978: 361. Type-species: *Indoencyrtus caeruleus* Hayat & Verma, by original designation.

**DISTRIBUTION AND SPECIES.** Twenty-four species, cosmopolitan except perhaps the Neotropics;

two species from review area: *caerulea* (Hayat & Verma, 1978: 362) (India) and *pulchra* Mercet (1921: 431) (India), also undetermined material, containing at least one undescribed species, from India, Sri Lanka, Hong Kong, Malaysia and Australia (BMNH, BPBM, HC).

**BIOLOGY.** Parasites of Acleridae and Pseudococcidae (Homoptera) and Cecidomyiidae (Diptera).

**COMMENTS.** Trjapitzin (1973*b*) places the genus in the subtribe Mayridiina which he incorrectly places in the tribe Miraini. *Mira* belongs to the subfamily Tetracneminae whilst *Mayridia* belongs in the Encyrtinae. In our view, the most realistic solution to the problem this creates would be the transfer of the subtribe Echthroplexiellina (also incorrectly included in the Miraini) to the Aphycini and the Mayridiina to the Cheiloneurini.

### **MENISCOCEPHALUS** Perkins

(Key couplets: 425, 441, 476)

*Meniscocephalus* Perkins, 1906: 249. Type-species: *Meniscocephalus eximius* Perkins, by monotypy.  
*Helmecephala* Noyes, 1980: 200. Type-species: *Helmecephala albisetosa* Noyes, by original designation.  
**Syn. n.**

**DISTRIBUTION AND SPECIES.** Four described species, Neotropical, Oriental, Australasian; two species from review area: *exflores* (Trjapitzin, 1982*b*: 1603–1604) (**comb. n.** from *Helmecephala*) (Indonesia) and *eximius* Perkins (1906: 249) (Malaysia, Australia), also further undetermined material, including several undescribed species, from India to Australia (BMNH, BPBM, QM).

**BIOLOGY.** Parasites of nymphs of Cicadellidae (Homoptera).

**COMMENTS.** We are unable to place the genus according to Trjapitzin's (1973*b*) classification, but it may be related to genera included in the tribe Prionomasticini (see Noyes, 1980: 202) or, as Trjapitzin (1982*b*) suggests, it may belong in the tribe Cheiloneurini, subtribe Tyndarichina.

### **MESANUSIA** Girault

(Key couplet: 203)

*Blatticida* Girault, 1915*a*: 94. Type-species: *Blatticida ashmeadi* Girault, by original designation.  
 [Homonym of *Blatticida* Ashmead, 1904.] **Syn. n.**  
*Mesanusia* Girault, 1922*d*: 208. Type-species: *Mesanusia latiscapus* Girault, by monotypy.  
*Blatticidella* Gahan & Fagan, 1923: 22. [Replacement name for *Blatticida* Girault.] **Syn. n.**

**DISTRIBUTION AND SPECIES.** Two described species, Australia only: *ashmeadi* (Girault, 1915*a*: 94) (**comb. n.** from *Blatticida*) and *latiscapus* Girault (1922*d*: 208), also one further undescribed species from Papua New Guinea (BPBM).

**BIOLOGY.** Parasites of eggs of cockroaches (Orthoptera, Blattodea) and Tettigoniidae (Orthoptera).

**COMMENTS.** *Mesanusia speciosa* (see p. 353) does not belong in this genus and we are unable to place it with any degree of certainty.

*Mesanusia* is related to *Ooencyrtus* (Microteriyini, subtribe Ooencyrtina) from which it can be separated by the very large, obliquely truncate clava and relatively longer marginal vein of the forewing.

### **MESASTYMACHUS** Girault

*Mesastymachus* Girault, 1923*c*: 142. Type-species: *Mesastymachus silvae* Girault, by monotypy.

**DISTRIBUTION AND SPECIES.** One species, Australia only: *silvae* Girault (1923*c*: 142).

**BIOLOGY.** Unknown.

COMMENTS. Unfortunately the type(s) of *silvae* appear to be lost and therefore the generic and specific names will have to be regarded as nomina dubia. However, when the Australian encyrtid fauna is better known, it should be possible to recognise the genus and possibly even the species from Girault's meagre description.

### **MESOCALOCERINUS** Girault

(Key couplet: 255)

*Mesocalocerinus* Girault, 1922d: 206. Type-species: *Mesocalocerinus gemmus* Girault, by monotypy.

DISTRIBUTION AND SPECIES. One species, Australia only: *gemma* Girault (1922d: 206).

BIOLOGY. Unknown.

COMMENTS. Very close to *Cheiloneurus* and quite possibly should be considered synonymous. However, we are retaining it as a distinct genus until the genera belonging to this difficult group can be studied in more detail. For the present it can be separated from *Cheiloneurus* on the combination of the basal cell of the forewing being setose to the base, the scutellum lacking a subapical tuft of setae and the basal segment of the gaster being orange and contrasting with the dark remainder (in *Cheiloneurus* the basal cell is usually bare in its proximal half or so, the scutellum usually has a subapical tuft of setae and the gaster is usually unicolorous; the combination of these characters is never the same as in *Mesocalocerinus*).

### **MESORHOPELLA** Girault

(Key couplet: 71)

*Mesorhopella* Girault, 1923c: 145. Type-species: *Mesorhopella emersoni* Girault, by monotypy.

DISTRIBUTION AND SPECIES. One species, Australia only: *emersoni* Girault (1923c: 145).

BIOLOGY. Unknown.

COMMENTS. The genus is extremely close to *Pararhopella* from which it differs by the characters given in the key. Both genera probably belong in the tribe Trechnitini and can be distinguished from related genera by the five-segmented funicle, very elongate clava (longer than funicle), absence of notaular lines on the mesoscutum and relatively small size, not being much larger than 0.75 mm (excluding ovipositor).

### **METAPHAENODISCUS** Mercet

(Key couplet: 480. Fig. 237)

*Metaphaenodiscus* Mercet, 1921: 626. Type-species: *Metaphaenodiscus nemoralis* Mercet, by original designation.

*Keatsia* Girault, 1928a: 1. Type-species: *Keatsia umbilicata* Girault, by monotypy. **Syn. n.**

*Ramalia* Ferrière, 1953: 27. Type-species: *Tetralophidea maxima* Mercet, by original designation.

DISTRIBUTION AND SPECIES. Ten species, Palaearctic, Afrotropical, and Australasian; four from review area: *aligarhensis* Hayat (1981b: 25) (India), *proximus* (Hayat, 1981b: 26) (India), *umbilicatus* (Girault, 1928a: 1) (**comb. n.** from *Keatsia*) (Australia) and *yasumatsui* Myartseva & Trjapitzin (1979: 1238), also further undetermined material from S. China, Java and Australia (BMNH, BPBM).

BIOLOGY. Parasites of Pseudococcidae (Homoptera).

COMMENTS. Belongs to the tribe Aenasiini (see comments under *Aenasius*) and distinguished from related genera by the very broad, menisciform head and the relatively long marginal and short postmarginal and stigmal veins of the forewings.

**METAPHYCUS** Mercet

(Key couplets: 180, 377. Fig. 104)

*Metaphycus* Mercet, 1917a: 138. Type-species: *Aphycus zebratus* Mercet, by monotypy.*Mercetiella* Dozier, 1926: 98. Type-species: *Mercetiella reticulata* Dozier, by original designation.*Oaphycus* Girault, 1932a: 5. Type-species: *Aphycus sanguinithorax* Girault, by original designation.**Syn. n.***Melanaphycus* Compere, 1947a: 5. Type-species: *Pseudococcobius fumipennis* Timberlake, by original designation.*Anaphycus* Sugonjaev, 1960: 372. Type-species: *Aphycus nitens* Kurdjumov, by original designation.*Notoencyrtus* De Santis, 1964: 211. Type-species: *Notoencyrtus guttofasciatus* De Santis, by original designation.

**DISTRIBUTION AND SPECIES.** About 200 described species, cosmopolitan; 38 from review area: *agarwali* Hayat & Subba Rao (1981: 115) (= *latiscapus* Shafee, Alam & Agarwal, 1975: 84) (India), *alberti* (Howard; Annecke & Mynhardt, 1981: 38) (Hawaiian Is.), *angustifrons* Compere (1957: 227) (Taiwan), *argenteus* (Girault, 1936: 1) (**comb. n.** from *Aphycus*) (Australia), *atriphragma* (Girault, 1936: 1) (**comb. n.** from *Aphycus*) (Australia), *bicinctitibiae* (Girault, 1932c: 1) (**comb. n.** from *Aphycopsis*) (Australia), *bowenesis* (Girault, 1932a: 4) (**comb. n.** from *Aphycus*) (Australia), *buderimi* (Girault, 1936: 1) (**comb. n.** from *Aphycus*) (Australia), *cerococci* (Shafee, Alam & Agarwal, 1975: 83) (India), *citricola* Annecke & Mynhardt (1971: 333) (Pakistan), *claviger* (Timberlake, 1916: 620) (New Zealand), *crotolariae* (Shafee, Alam & Agarwal, 1975: 85) (India), *flavus* (Howard; = *hesperidum* Mercet, 1916: 784) (India, Hawaiian Is.), *fuscidorsum* (Gahan, 1919: 521) (**comb. n.** from *Aphycus*) (India), *gontisharenkoi* Trjapitzin & Khlopunov (1976: 98) (Vietnam), *helvolus* (Compere; Annecke & Mynhardt, 1981: 42) (Pakistan, Bangladesh); *indicus* Shafee, Alam & Agarwal (1975: 79) (India), *iohneumon* (Girault, 1936: 1) (**comb. n.** from *Aphycus*) (Australia), *keatsi* (Girault, 1932a: 4) (**comb. n.** from *Aphycus*) (Australia), *latiscapus* Alam (1972: 134) (India), *lichtensiae* (Howard; Compere & Annecke, 1961: 35) (Pakistan, India, Sri Lanka), *longiclavatus* (Shafee, Alam & Agarwal, 1975: 88) (India), *lounsburyi* (Howard, 1898b: 244) (Hawaiian Is.), *maculatus* Agarwal (1965: 89) (India), *malabarensis* (Mukerjee in Saraswat & Mukerjee, 1975: 46) (India), *memnonicus* Compere (1940: 46) (Australia), *mexicanus* (Howard, 1898b: 247) (Hawaiian Is.), *nigrivarius* (Girault, 1929b: 313) (**comb. n.** from *Aphycus*) (Australia), *parkeri* (Girault, 1932a: 1) (**comb. n.** from *Aenasomyiella*) (Australia), *portoricensis* (Dozier, 1926: 100) (Hawaiian Is.), *sanguinithorax* (Girault, 1915a: 112) (**comb. n.** from *Aphycus*) (Australia), *semialbus* (Girault, 1932a: 5) (**comb. n.** from *Aphycus*) (Australia), *stanleyi* (Compere; Compere & Annecke, 1961: 33) (Hawaiian Is.), *timberlakei* (Ishii, 1923: 108) (New Zealand), *tricinctus* (Girault, 1931a: 4) (**comb. n.** from *Aphycus*) (Australia), *turneri* (Girault, 1932a: 5) (**comb. n.** from *Aphycus*) (Australia), *varius* (Girault, 1915a: 178) (**comb. n.** from *Aenasioidea*) (Australia), *verdini* (Girault, 1936: 1) (**comb. n.** from *Aphycus*) (Australia), *zebratus* (Mercet, 1917a: 138) (India), also much undetermined material from throughout the region (BMNH, BPBM, DSIR, QM, ANIC, GC, HC).

**REFERENCES.** Timberlake (1916: 587–639); Afrotropical species, with descriptions of some relevant species: Annecke & Mynhardt (1971; 1972; 1981); review of some Indian species: Shafee *et al.* (1975: 78–88).

**BIOLOGY.** Parasites of Coccidae, Diaspididae, Keriidae, Asterolecaniidae and Eriococcidae (Homoptera).

**COMMENTS.** *Mesanusia speciosa* Girault (see p. 353) may also belong in this genus, but this will only be confirmed when fresh material is collected.

*Metaphycus argenteus* and *iohneumon* may be synonymous, also *crotolariae* may be synonymous with *fuscidorsum*.

The genus is placed in the tribe Aphycini, subtribe Paraphycina (Encyrtinae) (see comments under *Paraphycus*).

**MICROTERTYS** Thomson

(Key couplets: 94, 102, 139, 237, 261, 383)

*Sceptrophorus* Förster, 1856: 34. Type-species: *Encyrtus sceptriger* Förster, by designation of Ashmead (1900b: 381) [Suppressed in favour of *Microterys* Thomson: Opinion 1110, 1978, *Opin. Decl. int. Commn zool. Nom.* 35: 99–100.]

*Microterys* Thomson, 1876: 155. Type-species: *Encyrtus sylvius* Dalman, by designation of Ashmead (1900: 390).

*Apentelicus* Fullaway, 1913: 26. Type-species: *Apentelicus kotinskyi* Fullaway, by original designation.

**DISTRIBUTION AND SPECIES.** Very nearly 150 described species, cosmopolitan; 20 from review area: *anomolococci* Shafee, Alam & Agarwal (1975: 69) (India), *aristotelea* (Girault; Prinsloo, 1976b: 414) (Australia), *australicus* Prinsloo (1976b: 420) (Australia), *clauseni* Compere (1926: 35) (Pakistan), *ditaeniatus* Huang (1980: 432, 434) (S. China), *flavus* (Howard; = *frontalis* Mercet, 1921: 413) (Pakistan, India, Sri Lanka, Australia, New Zealand, Hawaiian Is.), *garibaldia* (Girault; Prinsloo, 1976b: 417) (Australia), *gilberti* (Girault; Prinsloo, 1976b: 411) (Australia), *hesperidum* (Trjapitzin & Khlopunov, 1976: 101) (Vietnam), *indicus* Subba Rao (1977: 13) (India), *kerrichi* Shafee, Alam & Agarwal (1975: 69) (India), *lichtensiae* (Howard in Howard & Ashmead, 1896: 636) (Sri Lanka), *longifuniculus* (Girault, 1932b: 1) (Australia), *mirzai* Shafee, Alam & Agarwal (1975: 67) (India), *newcombi* (Girault; Prinsloo, 1976b: 413) (Malaysia, Australia), *nietneri* (Motschulsky, 1859: 170) (Sri Lanka), *purpureiventris* (Girault; Prinsloo, 1976b: 417) (Australia), *sinicus* Jiang (1982: 180, 186) (S. China), *spinozai* (Girault; Prinsloo, 1976b: 415) (Australia) and *triguttatus* (Girault; Prinsloo, 1976b: 414) (Australia), also much undetermined material, including several undescribed species, from throughout the region (BMNH, BPBM, QM, ANIC, USNM, HC).

**REFERENCES.** World catalogue: Rosen (1976); review of some species: Shafee *et al.* (1975: 65–71); review of Australian species: Prinsloo (1976b).

**BIOLOGY.** Parasites of Coccidae, Kermococcidae and Lecaniodiaspididae (Homoptera).

**COMMENTS.** One undescribed species from Brunei (BMNH) has an apical tuft of setae on the scutellum similar to that found in *Cheiloneurus*.

The types of *Microterys coeruleus* Bingham (HDOU) have been examined by Z. Bouček who informs us that the female belongs to *Tetrastichus* (Eulophidae) and the male to *Anastatus* (Eupelmidae).

Placed in the tribe Microterysiini, subtribe Microterysiina (Encyrtinae).

**MIRA** Schellenberg

(Key couplet: 77)

*Mira* Schellenberg, 1803: 68. Type-species: *Mira mucora* Schellenberg, by monotypy.

*Dicelloceras* Menzel, 1855: 270. Type-species: *Dicelloceras vibrans* Menzel, by monotypy.

*Euryscapus* Förster, 1856: 32. Type-species: *Encyrtus platycerus* Dalman, by original designation.

*Lonchocerus* Dahlbom, 1857: 292. Type-species: *Encyrtus platycerus* Dalman, by subsequent reference of Thomson (1876: 130).

*Euzkadia* Mercet, 1921: 552. Type-species: *Euzkadia integralis* Mercet, by original designation.

**DISTRIBUTION AND SPECIES.** Four described species, Palearctic; one undescribed species from Australia (BMNH, UCR).

**REFERENCE.** Revision of European species: Bouček (1977b: 141–146).

**BIOLOGY.** Unknown.

**COMMENTS.** The genus has been incorrectly placed in the subfamily Encyrtinae by Trjapitzin (1973b). It is actually very close to the genera included in the tribe Charitopidini (Tetracneminae).

**MONSTRANUSIA** Trjapitzin

(Key couplet: 118)

*Monstranusia* Trjapitzin, 1964b: 243. Type-species: *Monstranusia mirabilissima* Trjapitzin, by original designation.

DISTRIBUTION AND SPECIES. Two species, Palearctic, Afrotropical, Oriental; both known from Oriental region: *antennata* (Narayanan, 1960: 122) (India) and *mirabilissima* Trjapitzin (1964b: 245) (Pakistan).

BIOLOGY. Unknown.

COMMENTS. Placed in the tribe Anagyrini, subtribe Anusiina (Tetracneminae) by Trjapitzin (1973a), but possibly this may be incorrect since it also shows many characters in common with the Tetracnemini, e.g. forewing venation and infuscation.

**MOZARTELLA** Girault

(Key couplet: 65)

*Mozartella* Girault, 1926a: 1. Type-species: *Mozartella beethoveni* Girault, by monotypy.

DISTRIBUTION AND SPECIES. One species, Australia only: *beethoveni* Girault (1926a: 1).

BIOLOGY. Apparently reared from plant galls.

COMMENTS. The genus superficially appears to be very close to *Pseudectroma* and *Acerophagus* (tribe Aphycini, subtribe Aphycina) but differs in the mandible having two teeth and a broad truncation instead of three teeth. This character may indicate a relationship with *Aphycomorpha* which has been placed in the tribe Aphycini by Trjapitzin (1973b) but which we now believe belongs in the Microteriyini (see comments under *Aphycomorpha*).

**MULUENCYRTUS** gen. n.

(Key couplet: 458. Figs 215, 216, 371–373)

Type-species: *Muluencyrtus nudipennis* sp. n. Gender: masculine.

♀. *Head*. In frontal view slightly broader than long and in side view about twice as long as broad and anteriorly more or less gradually and evenly rounded. Eye relatively small with sparse, short, inconspicuous setae each not longer than the diameter of a facet, posterior margin of eye straight, eye a little less than one-third longer than broad, not quite reaching occipital margin which is sharply carinate behind ocelli. Malar space slightly longer than eye, sulcus absent, but more or less indicated by a change of sculpture; mouth opening relatively small, about two-fifths head width. Frontovertex about two-fifths head width; ocelli in a right angle, the posterior ones a little closer to eye margin than to occipital margin, separated from the latter by about their own major diameters. Antennal scrobes only a little longer than toruli, gently curved inwards but not meeting dorsally, reaching about half way from antennal toruli to anterior ocellus; antennal torulus separated from mouth margin by slightly more than its own length and from other torulus by about one and one-half times its own length, its dorsal margin a little below ventral eye margin; clypeus very shallowly excised, but broadly concave. Antennal scape distinctly longer than width of frontovertex, subcylindrical, slightly more than four and one-half times as long as broad, with a pair of short flanges on its lower surface either side of pedicel and clothed in conspicuous long setae; pedicel cylindrical, about one-third length of scape, shorter than any of the first three funicle segments but longer than any of the last three; clava entire, transversely truncate about one-third length of funicle; longitudinal sensillae on all flagellar segments except perhaps the first two; setae on flagellum moderately long, the longest being slightly longer than diameter of first funicle segment. Frontovertex above scrobes with shallow, raised, squamiform-reticulate sculpture; between scrobes and eyes and interantennal prominence dorsally with rough, raised, irregular sculpture, this continuing onto lower parts of face but becoming shallower and more longitudinally elongate; setae on frontovertex and, to a less extent, on lower parts of

face but borne in shallow, but distinct punctures; setae moderately sparse, short and inconspicuous on frontovertex above toruli, but longer and more conspicuous on genae and lower parts of interantennal prominence. Mandible broad with two teeth and a broad truncation; maxillary palpus four-segmented, labial palpus three-segmented.

**Thorax.** Moderately robust in side view, with mesoscutum more or less flat but slightly convex anteriorly and scutellum very slightly convex; the metapleurum and propodeum together narrowly in contact with hind coxa. In dorsal view pronotum moderately concave posteriorly, with spiracles clearly visible laterally; visible part of mesoscutum slightly less than twice as broad as long, with notaular lines absent, its hind margin slightly produced distad; axillae slightly separated; scutellum slightly shorter than mesoscutum and slightly broader than long, its apex more or less acute; propodeum medially a little less than one-quarter length of scutellum. Dorsum of thorax with very shallow, raised, squamiform-reticulate sculpture; mesopleurum more or less smooth and shiny; propodeum more or less smooth; dorsum of thorax clothed with very short, inconspicuous dark setae. Forewing infusate, about two and one-half times as long as broad; linea calva not interrupted or closed; dorsal surface of forewing with extremely sparse discal setae, apart from a few setae in basal cell and filum spinosum almost naked dorsally, those on dorsal surface clearly much less dense than those ventrally; submarginal vein without an apical hyaline break, parastigma not swollen; costal cell about nine or ten times as long as broad, with only one seta dorsally near apex; marginal vein about twice as long as broad, about as long as postmarginal and a little longer than half stigmal vein. Hindwing about two-thirds length of forewing, very slightly infumate, about three and one-half times as long as broad; marginal fringe about one-ninth as long as maximum wing width. Mid tibial spur about one-half as long as basal mid tarsal segment; all legs very smooth; hind and mid tarsi very characteristic, being very smooth and shiny and gradually tapering towards apex; hind tibia with apex strongly oblique (Fig. 216).

**Gaster.** About as long as thorax; cercal plates in apical one-third; hypopygium with apex reaching to about three-quarters along gaster; ovipositor not or only slightly exerted; paratergites presumably absent.

♂. Unknown.

**COMMENTS.** The affinities of this interesting new genus are not at all clear, but the head shape and structure, forewing venation and positioning of the cercal plates suggest that it should be placed near *Encyrtus*, *Olypusa* or perhaps *Eucomomorphella*. It can be easily separated from these genera by the nearly naked dorsal surface of the forewing and from *Encyrtus* and *Olypusa* by the smaller eyes and presence of mandibular teeth. The presence of mandibular teeth suggest that it is closest to *Eucomomorphella*, but this genus has a very long postmarginal vein and three-segmented clava (see comments under *Anagyrodus*).

### *Muluencyrtus nudipennis* sp. n.

(Figs 215, 216, 371–373)

♀. Length, 2.06 mm.

**Colour.** Body, including legs and antenna, reddish brown to dark reddish brown; apex of clava whitish yellow; between each eye and occiput more or less orange-brown; mesoscutum with a slight bluish sheen; scutellum slightly purplish brassy; scutellum laterally either side of apex, metanotum and propodeum medially brown; forewing infusate as in Fig. 373.

**Head.** Frontal view as in Fig. 372. Relative measurements: head length 85, head width (frontal view) 100, head width (side view) 47, minimum width of frontovertex 39, POL 16, OOL 5, malar space 46, length of eye 43, width of eye 37, scape length 55, other proportions of antenna as in Fig. 371.

**Thorax.** Relative measurements: forewing length 220, hindwing length 153, hindwing width 45; forewing as in Fig. 373, venation as in Fig. 215, hind tibia and tarsus as in Fig. 216.

**Gaster.** Relative lengths: last tergite 46, [mid tibia 132].

♂. Unknown.

**DISTRIBUTION.** Sarawak.

**BIOLOGY.** Unknown.

**MATERIAL EXAMINED**

Holotype ♀, **Sarawak:** Gunong Mulu National Park, 26.v.1978 (*N. M. Collins*) (BMNH).

**NASSAUIA** Girault

(Key couplet: 50)

*Nassauia* Girault, 1932a: 5. Type-species: *Nassauia atoma* Girault, by monotypy.DISTRIBUTION AND SPECIES. Two species, Australia only: *atoma* Girault (1932a: 5) and *secunda* Girault (1932c: 3).

BIOLOGY. Reared from 'coccids' (Girault, 1932c: 3).

COMMENTS. The genus is near *Metaphycus* (tribe Aphycini, subtribe Paraphycina) and differs from all related genera in having a four-segmented funicle.**NATHISMUSIA** gen. n.

(Key couplet: 37. Figs 214, 374–376)

Type-species: *Nathismusia southwoodi* sp. n. Gender: feminine.

♀. *Head*. In facial view about one-quarter wider than long, with mouth opening very wide, about half head width, in side view head about two-thirds longer than wide and anteriorly more or less gradually curved. Eyes very small with posterior margin straight, almost oval, a little longer than broad, naked; eye separated from occipital margin, which is rounded, by at least about twice the diameter of an ocellus. Malar space about as long as an eye with sulcus absent but marked by a slight change of sculpture. Frontoververtex about three-quarters head width, ocelli forming an obtuse angle of about  $110^\circ$ , the posterior ocelli separated from occipital margin by a little more than their diameter but from eye margin by about five times their diameter. Antennal scrobes extremely shallow, broadly semicircular, more or less meeting dorsally and reaching about half way from toruli to anterior ocellus; antennal torulus separated from mouth by a little less than its own length and from other torulus by about one and one-half times its own length, its upper margin a little above the lower eye margin; clypeus broadly but shallowly excised below and between toruli. Antennal scape a little longer than half minimum width of frontoververtex, stout, a little more than three times as long as broad; pedicel conical, nearly half length of scape and clearly longer than any funicle segment, all subquadrate, the first the longest, the sixth the shortest; clava three-segmented, its apex rounded, sutures between segments subparallel; longitudinal sensillae on all flagellar segments; longest setae not much more than one-third as long as diameter of segments. Frontoververtex with extremely shallow, raised reticulate sculpture, this becoming more elongate on lower parts of face and genae; setae on head moderately dense, very short, inconspicuous. Mouth parts not clearly visible in single specimen available.

*Thorax*. Moderately deep in side view, but conspicuously dorso-ventrally flattened, the mesoscutum and scutellum almost completely flat, the anterior face of the pronotum almost perpendicular, the metapleurum and propodeum fairly broadly in contact with hind coxa. In dorsal view hind margin of pronotum shallowly concave; visible part of mesoscutum slightly more than twice as broad as long, with notaular lines absent and its hind margin almost straight, only very slightly produced backwards; axillae nearly touching in middle, not clearly separated from scutellum which is nearly one-third longer than mesoscutum and apically rounded; propodeum medially less than one-seventh as long as scutellum. Dorsum of thorax with similar sculpture to frontoververtex but a little deeper on posterior part of mesoscutum than on scutellum; mesopleurum with shallow, raised, slightly elongate, reticulate sculpture; propodeum almost completely smooth, but with some irregular sculpture near spiracle and laterally; setae on dorsum of thorax sparse, dark and short, very inconspicuous. Forewing lightly infused greyish brown, with a small dark brown spot immediately below marginal vein, wing nearly three times as long as broad with marginal fringe very short, nearly absent; linea calva completely obliterated by setae on both surfaces of wing; filum spinosum absent; setae in disc of forewing very dense, short and evenly distributed except near extreme base where they are virtually absent; submarginal vein with an indistinct hyaline break, parastigma hardly swollen; costal cell about 11 times as long as broad and with one line of setae dorsally in its proximal one-third and two or three lines of setae in its distal two-thirds or so; marginal vein thick, about twice as long as wide, longer than stigmal vein which in turn is longer than postmarginal. Hindwing lightly infused pale greyish brown, about two-thirds as long as forewing; marginal setae about one-seventh as long as maximum wing width. Mid tibial spur a little shorter than mid basal tarsal segment.

*Gaster*. Slightly longer than thorax with cercal plates in posterior half; hypopygium reaching apex of gaster; last tergite a little less than one-third as long as mid tibia; paratergites not visible, probably absent; ovipositor hardly exerted.

♂. Unknown.

COMMENTS. Placement of this genus is difficult, although it must certainly belong to the Encyrtinae. It may be related to *Coelopencyrtus* (tribe Copidosomatini, subtribe Ceolopencyrtina) since there are some similarities in head shape, forewing venation and structure of the gaster. However, it can easily be separated on the relatively small eyes, high placement of antennal toruli, lack of linea calva and very short last abdominal tergite.

The type-species of the genus is named in honour of Professor Sir T. R. E. Southwood.

***Nathismusia southwoodi* sp. n.**

(Figs 214, 374–376)

♀. Length (holotype): 1.16 mm.

*Colour.* Generally dark brown; antenna yellowish brown; wings suffused very pale greyish brown, dark brown immediately below marginal vein of forewing; all coxae dark brown, femora dark brown, fore and mid femora apically yellow, tibiae and tarsi yellow, pretarsi dark brown.

*Head.* Relative measurements: head length 45, head width (facial view) 56, head width (side view) 27, minimum width of frontovertex 42, malar space 18, eye length 17.5, eye width 14, POL 13.5, OOL 16.5, scape length 23, scape width 7, proportions of antenna as in Fig. 374, head in facial view as in Fig. 375.

*Thorax.* Relative measurements: forewing length 165, forewing width 62, venation as in Figs 214, 376; hindwing length 115, hindwing width 27. Base of forewing as in Fig. 214.

*Gaster.* Relative lengths: last tergite 21, [mid tibia 62].

♂. Unknown.

DISTRIBUTION. India.

BIOLOGY. Unknown.

MATERIAL EXAMINED

Holotype ♀, **India:** Hyderabad, Patancheru, ICRISAT, vii–ix.1980, Malaise trap (*Bernays & Woodhead*) (BMNH).

***NEABROLEPOIDEUS* Girault**

(Key couplet: 255)

*Neabrolepoideus* Girault, 1917g: 140. Type-species: *Neabrolepoideus bioculatus* Girault, by original designation.

DISTRIBUTION AND SPECIES. One described species, Australia only: *bioculatus* Girault (1917g: 141), also one further undescribed species from Australia (BMNH).

BIOLOGY. Unknown.

COMMENTS. The genus belongs to the tribe Cheiloneurini (Encyrtinae) and is very close to *Cheiloneurus* from which it more or less differs only by the setae of the forewing reaching nearer the base, the pattern of infuscation of the forewing, the scutellum being slightly more convex and lacking the apical tuft of setae, and the body (especially the antenna) being more slender (see comments under *Cheiloneurus*).

***NEANAGYRUS* Girault**

(Key couplets: 495, 523)

*Neanagyrus* Girault, 1915a: 174. Type-species: *Neanagyrus capitatus* Girault, by original designation.

*Anisodromus* Riek, 1962c: 283. Type-species: *Anisodromus tarsius* Riek, by original designation. **Syn. n.**

DISTRIBUTION AND SPECIES. Three species, all Australian: *capitatus* Girault (1915a: 174), *niger* (Riek, 1962c: 285) (**comb. n.** from *Anisodromus*) and *tarsius* (Riek, 1962c: 283) (**comb. n.** from *Anisodromus*).

BIOLOGY. Parasites of lerp-forming Psyllidae (Homoptera).

COMMENTS. The genus is very close to *Psyllaephagus* (Trechnitini, subtribe Metaprionomitina) and perhaps should be considered as a species-group within that genus since it differs only in the structure of the antenna.

### **NEASTYMACHUS** Girault

(Key couplets: 181, 312, 414. Fig. 101)

*Neastymachus* Girault, 1915a: 86. Type-species: *Neastymachus auraticorpus* Girault, by monotypy.  
*Nikolskiella* Trjapitzin, 1962b: 560. Type-species: *Microterys luteus* Nikol'skaya, by original designation.

**Syn. n.**

*Pseudmicroterys* Shafee, Alam & Agarwal, 1975: 71. Type-species: *Pseudmicroterys burski* Shafee, Alam & Agarwal, by original designation. **Syn. n.**

DISTRIBUTION AND SPECIES. Provisionally eight species, Palaearctic, Afrotropical, Oriental, Australasian; five from review area: *angustifrons* (Shafee, Alam & Agarwal, 1975: 76) (**comb. n.** from *Pseudmicroterys*) (India), *auraticorpus* Girault (1915a: 86) (Australia), *burski* (Shafee, Alam & Agarwal, 1975: 73) (**comb. n.** from *Pseudmicroterys*) (India), *cerococchi* (Shafee, Alam & Agarwal, 1975: 76) (**comb. n.** from *Pseudmicroterys*) (India) and *delhiensis* (Subba Rao, 1957: 387) (**comb. n.** from *Microterys*) (India), also undetermined material from Sri Lanka, Hong Kong and Malaysia (BMNH, BPBM).

REFERENCE. Review of some Indian species: Shafee *et al.* (1975: 71–78).

BIOLOGY. Parasites of Acleridae and Asterolecaniidae (Homoptera).

COMMENTS. *Neastymachus auraticorpus* Girault is very close to *luteus* Nikol'skaya (**comb. n.**), differing only slightly in the relative proportions of the antennal segments, forewings and width of frontovertex.

We have examined paratypes of *Nikolskiella japonica* Tachikawa (1970: 100). The species does not appear to belong in *Neastymachus* nor to any genus known to us. We have not seen any material of *Nikolskiella secunda* Trjapitzin (1962b: 565) and therefore defer formally transferring it to *Neastymachus*.

The genus is placed in the tribe Microterytini, subtribe Microterytina (Encyrtinae).

### **NEBLATTICIDA** Girault

(Key couplet: 130)

*Neblatticida* Girault, 1915a: 96. Type-species: *Neblatticida fasciatis* Girault, by original designation.

DISTRIBUTION AND SPECIES. Three species, all Australian: *fasciatis* Girault (1915a: 96), *lotae* (Girault, 1922b: 106) (**comb. n.** from *Baeoanusia*) and *perfuscipennis* (Girault, 1915a: 164) (**comb. n.** from *Baeoanusia*).

BIOLOGY. Unknown.

COMMENTS. The generic placement of *perfuscipennis* is difficult. Girault originally included it in *Baeoanusia*, no doubt because of the similarity in the structure of the mandible. It is very probable that *perfuscipennis* belongs to neither *Neblatticida* nor *Baeoanusia* if these genera are defined as narrowly as they are at present. However, *perfuscipennis* will run to *Neblatticida* in the key to genera as it stands and therefore this necessitates the transfer of this species to *Neblatticida*.

Both *Neblatticida* and *Baeoanusia* belong to the Cheiloneurini (Encyrtinae) and a detailed study is required in order to achieve some idea of the natural grouping of the species, particularly those in Australia, before the generic limits can be determined with any degree of certainty. We feel that when such a study can be undertaken, very many of the genera recognised at present will fall in synonymy (see also comments under *Cheiloneurus*).

**NEGENIASPIDIUS** Trjapitzin

(Key couplet: 322)

*Negeniaspidius* Trjapitzin, 1982a: 39. Type-species: *Encyrtus nobilis* Nees, by original designation.

DISTRIBUTION AND SPECIES. Only one described species, Palaearctic, Afrotropical and Oriental: *nobilis* (Nees; = *Coccidencyrtus pretiosus* Mercet, 1921: 281) (India).

BIOLOGY. Unknown.

COMMENTS. It is possible that the species occurring in southern Africa (Zambia, Zimbabwe) is distinct from *nobilis* (BMNH).

We are unable to place *Negeniaspidius* according to Trjapitzin's (1973b) classification of the Encyrtinae although quite possibly it is related to *Lamennaisia*.

**NEOCHARITOPUS** Hayat, Alam & Agarwal

(Key couplet: 502. Figs 243, 244, 380)

*Neocharitopus* Hayat, Alam & Agarwal, 1975: 24. Type-species: *Charitopus orientalis* Agarwal, by original designation.

*Insleyia* Prinsloo & Annecke, 1979: 377. Type-species: *Insleyia crassa* Prinsloo & Annecke, by original designation. **Syn. n.**

DISTRIBUTION AND SPECIES. Two species, Afrotropical, Oriental; one from review area: *orientalis* (Agarwal, 1965: 91) (India).

BIOLOGY. Parasites of Pseudococcidae (Homoptera).

COMMENTS. We have compared some paratypes of *Insleyia crassa* with material of *Neocharitopus orientalis* collected in India and find that they must be considered congeneric. Further study, using fresh material of *orientalis* for comparison, may reveal that the two species are also synonymous. The material of *orientalis* at hand is not in sufficiently good condition for reliable comparison at this level.

The genus belongs in the tribe Charitopidini (Tetracneminae) and is superficially very similar to *Manicnemus* from which it can be separated by the hyaline forewings and relatively short propodeum (not more than about one-fifth length of scutellum). The forewings of *Manicnemus* are strongly infusate and the propodeum is about half as long as the scutellum.

**NEOCLADELLA** Girault

(Key couplets: 110, 186. Figs 110, 111)

*Neocladella* Girault, 1915a: 99. Type-species: *Neocladella compressipes* Girault, by original designation.

*Pteromalencyrtus* Girault, 1915a: 116. Type-species: *Pteromalencyrtus quadridentatus* Girault, by original designation. **Syn. n.**

DISTRIBUTION AND SPECIES. One species, Australia only: *compressipes* Girault (1915a: 99) (= *Pteromalencyrtus quadridentatus* Girault, 1915a: 116 **syn. n.**).

BIOLOGY. Unknown.

COMMENTS. We favour the use of *Neocladella* as the valid generic name since the holotype of *compressipes* is in much better condition than that of *quadridentatus*.

Placement of the genus is difficult, but the wing venation suggests that it very probably belongs to the tribe Habrolepidini, subtribe Comperiellina. It is easily separated from genera included in this subtribe by the quadridentate mandible, relatively high placement of the antennal toruli on the head, relatively small scape and hyaline wings.

**NEOCLADIA** Perkins

(Key couplet: 36. Fig. 213)

*Neocladia* Perkins, 1906: 251. Type-species: *Neocladia howardi* Perkins, by monotypy.*Phyllotibia* Risbec, 1954: 1071. Type-species: *Phyllotibia senegalensis* Risbec, by monotypy.

DISTRIBUTION AND SPECIES. Seven species, Afrotropical, Oriental, Australasian; four from review area: *howardi* Perkins (1906: 251) (Australia), *indica* (Agarwal, 1970: 25) (India), *shadsakus* (Mani & Kaul in Mani *et al.*, 1973: 74) (India) and *violacea* Masi (1926: 272) (**stat. n.** from subspecies of *howardi*) (Taiwan), also further undetermined material from India to Hong Kong and Australia (BMNH, BPBM).

BIOLOGY. Parasites of nymphs of Cicadellidae (Homoptera).

COMMENTS. We have examined the holotype of *Neocladia howardi violacea* Masi (IPK). It represents a valid species differing from *howardi* in the forewing venation (shorter marginal vein and less curved stigmal).

Placed in the tribe Neoclatiini (Encyrtinae) which is possibly too narrowly defined by Trjapitzin (1973b) (see comments under *Anagyrodes*). It can be separated from other closely related genera by the combination of the enormously expanded and flattened hind tibia, sickle-shaped mandible, forewing with relatively long marginal vein, three-segmented clava and hypopygium more or less reaching the apex of the gaster.

**NEODISCODES** Compere

(Key couplets: 129, 210)

*Neodiscodes* Compere, 1931: 272. Type-species: *Neodiscodes martinii* Compere, by original designation.

DISTRIBUTION AND SPECIES. Seven species, Afrotropical, Oriental; four species from review area: *indicus* Narayanan & Subba Rao (1960: 75) (India, Pakistan), *lepelleyi* Kerrich (1953: 794) (India, Sri Lanka), *parvus* Kerrich (1967: 228) (S. China) and *subbaraoi* Kerrich (1967: 232) (Hong Kong, Java).

REFERENCE. Revision: Kerrich (1967: 228–235).

BIOLOGY. Parasites of Pseudococcidae (Homoptera).

COMMENTS. Here placed in the tribe Aenasiini (Tetracneminae) (see comments under *Aenasius*). It is very closely related to *Aenasius*, but can be separated by the relatively narrower frontovertex (see key, also Kerrich, 1967: 188–190).

**NEODUSMETIA** Kerrich

(Key couplet: 80. Figs 34, 377, 378)

*Neodusmetia* Kerrich, 1964a: 76. Type-species: *Dusmetia sangwani* Subba Rao, by original designation.

DISTRIBUTION AND SPECIES. One species known, New World, Afrotropical, Oriental and Australasian: *sangwani* (Subba Rao, 1957: 385) (Pakistan, India, Bangladesh, Philippines, Australia, Hawaiian Is.).

BIOLOGY. A parasite of *Antonina graminis* (Maskell) and has been successfully introduced into various parts of the world to control this mealybug (Homoptera, Pseudococcidae).

COMMENTS. We are unable to place the genus according to Trjapitzin's (1973a) classification of the Tetracneminae. It may be related to the genera of the Dinocarsini.

**NEOPLATYCERUS** Subba Rao

(Key couplet: 116. Fig. 56)

*Neoplatycerus* Subba Rao, 1965b: 150. Type-species: *Neoplatycerus tachikawai* Subba Rao, by original designation.

**DISTRIBUTION AND SPECIES.** One species, India only: *tachikawai* Subba Rao (1965b: 151), also at least three further undescribed species from India and Malaysia (BMNH).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** The genus belongs to the tribe Chrysoplatyicerini, subtribe Chrysoplatyicerina (Tetracneminae). A key to related genera is provided by Kerrich (1978: 113–114).

### **NEORHOPUS** Girault

(Key couplet: 56)

*Neorhopus* Girault, 1917g: 139. Type-species: *Neorhopus australicus* Girault, by original designation.

**DISTRIBUTION AND SPECIES.** One species, Australia only: *australicus* Girault (1917g: 140) (= *Neorhopus australicus aureus* Girault, 1917g: 140 **syn. n.**).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** Very close to *Rhopus* (tribe Anagyrini, subtribe Rhopina), but can be distinguished by having a five-segmented funicle, whereas *Rhopus* has a six-segmented funicle.

### **NEZARHOPALUS** Girault

(Key couplet: 198)

*Nezarhopalus* Girault, 1915a: 109. Type-species: *Nezarhopalus caudatus* Girault, by original designation.

**DISTRIBUTION AND SPECIES.** One species, Australia only: *caudatus* Girault (1915a: 109).

**BIOLOGY.** Unknown.

**COMMENTS.** The holotype of *caudatus* is in very poor condition and mounted on a slide (QM). A critical assessment of the validity of the genus will not be possible until freshly collected material can be carefully compared with it. The wings of the holotype cannot be located and the relative position of the apex of the hypopygium cannot be determined. These are considered to be important diagnostic characters and therefore we prefer to retain *Nezarhopalus* as valid for the present. However, the genus appears to be close to *Coccidoctonus* (tribe Microteryni, subtribe Syrphophagina) and *caudatus* may be very close to *C. lowelli*. From the parts available for comparison these two species differ only slightly in the relative width of the scape.

### **OLYPUSA** gen. n.

(Key couplet: 460. Figs 217–219, 379)

Type-species: *Olypusa hirsuta* sp. n. Gender: feminine.

♀. *Head.* In frontal view about one-quarter wider than long, in profile about twice as long as broad and more or less gradually and evenly rounded anteriorly. Eye with posterior margin straight with extremely short, sparse, inconspicuous setae, eye about one-third longer than broad and more or less reaching occipital margin which is very sharp. Malar space about one-half as long as eye, with sulcus absent. Frontoververtex about two-fifths head width; ocelli forming an obtuse angle, the posterior ones about equidistant from eye and occipital margins. Antennal scrobes broadly semicircular, just meeting dorsally and delimited dorsally by a more or less complete carina and reaching a little less than half way from antennal toruli to anterior ocellus; antennal torulus separated from mouth margin and from other torulus by a little more than its own length, its lower margin a little above the ventral margins of the eyes; mouth margin broadly concave. Antennal scape subcylindrical, about four or five times as long as broad and about as long as minimum width of frontoververtex; pedicel conical, about one-third as long as scape and a little shorter than first funicle segment which is clearly longer than broad; funicle segments cylindrical, shortening and broadening slightly so that sixth funicle segment is a little transverse; clava entire, apically rounded and slightly less than one-third as long as funicle; longitudinal sensillae on all flagellar segments, longest setae not more than about one-half as long as diameter of segments. Frontoververtex with shallow, raised, irregular, transverse, reticulate sculpture, this becoming finer and more irregular on lower parts of

face and on interantennal prominence; frontovertex with numerous short translucent setae, each a little shorter than the diameter of the facet, lower parts of face and interantennal prominence with fairly dense, downwardly directed pale setae. Mandible apically rounded, edentate; maxillary palpus four-segmented, the apical segment longer and larger than the other three together; labial palpus two-segmented.

*Thorax.* In side view robust, both mesoscutum and scutellum only very slightly convex, almost flat; metapleurum and propodeum together broadly in contact with hind coxa. In dorsal view posterior margin of pronotum broadly concave; visible part of mesoscutum slightly less than twice as broad as long with notaular lines absent, its posterior margin clearly convex; axillae meeting medially; scutellum a little longer than broad, apically rounded with an indistinct apical flange and very indistinctly carinate longitudinally in middle (this only visible if viewed in correct position and correct light); propodeum medially nearly one-third length of scutellum. Pronotum, mesoscutum and axillae with shallow, raised, squamiform-reticulate sculpture; scutellum with more longitudinally elongate and slightly deeper reticulate sculpture; propodeum with shallow, raised, reticulate sculpture; mesopleurum almost smooth with very shallow, raised, irregular, longitudinally elongate sculpture; pronotum, mesoscutum and axillae with fairly dense, short, inconspicuous dark setae, scutellum clothed in dense conspicuous white setae which become progressively longer towards apex of scutellum, propodeum on outside of spiracles with dense, short, pale setae. Forewing almost hyaline, but clearly suffused dark brown, slightly paler nearer base and with a few paler streaks or areas, wing only a little more than twice as long as broad; linea calva very narrow, closed towards hind margin by several lines of setae on dorsal surface; filum spinosum present; submarginal vein without an apical hyaline break and with parastigma a little but distinctly broader than proximal part of vein; costal cell about eight times as long as broad, with setae dorsally about as dense as in disc of wing; marginal vein about four times as long as broad; stigmal vein long and curved, about twice as long as marginal vein and subequal to postmarginal vein, a narrow naked streak extending from apex of postmarginal to apex of stigmal vein. Hindwing hyaline, about two-thirds lengths of forewing and about two and one-half times as long as broad, costal cell about seven times as long as broad, marginal setae less than one-twentieth maximum wing width. Mid tibial spur slightly shorter than mid basal tarsal segment.

*Gaster.* About two-thirds as long as thorax; cercal plates in basal one-third; hypopygium reaching to about four-fifths along gaster, with several long setae medially at its apex; ovipositor not exerted.

♂. Apart from genitalia and antenna very similar to female. Differs as follows. Antenna yellow with sixth funicle segment a little longer than broad. Genitalia with aedeagus spatulate, i.e. a little broadened subapically, digiti very stout, only about three times as long as broad.

COMMENTS. Belongs to the same group of genera as *Encyrtus*, *Prionomastix* and *Aethognathus* (see comments under *Anagyrodes*); separated from related genera by the combination of the solid clava in the female, relatively widely separated antennal toruli, densely hairy forewings, moderately long marginal vein, subequal postmarginal and stigmal veins, structure of scutellum, lack of apical scutellar tuft and the relatively well-advanced cercal plates (in the other genera they are generally about half way along gaster or in posterior half).

### *Olypusa hirsuta* sp. n.

(Figs 217–219, 379)

♀. Length: 1.82–2.24 mm (holotype, 2.14 mm).

*Colour.* Head, thorax and gaster black or very dark brown except a very narrow area between eye and occipital margin dorsally, on occiput immediately below this and a small quadrate area on each side of pronotum which are white; legs dark brown except knees, fore and mid tarsi, apex and base of mid femur and tibia, apex of mid tibia, mid tibial spur and basal tarsal segment which are yellowish white to yellow-orange, mid tibial spur sometimes dark brown; forewing generally suffused dark brown except proximal half of basal cell, costal cell, a small area at apex of venation and an indistinct longitudinal streak from linea calva which is more or less hyaline (Fig. 217).

*Head.* Relative measurements (holotype): head length 44, head width (facial view) 54, head width (side view) 24, minimum frontovertex width 22.5, malar space 15, eye length 30, eye width 23, POL 12.5, OOL 3, scape length 23, scape width 5, proportions of antennal segments as in Fig. 219, head in facial view as in Fig. 218.

*Thorax.* Relative measurements (holotype): forewing length 126, width 58, venation and base of forewing as in Fig. 217; hindwing length 91, hindwing width 33.

♂. Similar to female except antenna which is yellowish, foretibia which may be completely yellowish, and genitalia (see generic description). Antenna as in Fig. 379.

**DISTRIBUTION.** Papua New Guinea.

**BIOLOGY.** Unknown.

#### MATERIAL EXAMINED

Holotype ♀, **Papua New Guinea**: Wau, 1100–1200 m, vi.1968 (*N. L. H. Krauss*) (BPBM).  
Paratypes. **Papua New Guinea**, 1 ♀, Torricelli Mts, Mobitei, 750 m, 1–15.iv.1959 (*J. W. Brandt*) [Specimen lacking head]; 1 ♂, Kokoda-Pitoki, 400 m, 23.iii.1956 (*J. L. Gressitt*); 1 ♀, New Ireland, SW, Gilingil Plantation, 2 m, 5.vii.1956 (*J. L. Gressitt*) (specimen lacking head); 1 ♂, New Britain, Warongoi Valley, Gazelle Peninsula, 100 m, 25.v.1956 (*J. L. Gressitt*) (specimen lacking gaster) (BPBM).

### **OOENCYRTUS** Ashmead

(Key couplets: 91, 260, 283, 313, 339, 381, 393, 431, 438, 494, 514.

Figs 152, 177, 181, 182, 246, 381)

*Ooencyrtus* Ashmead, 1900b: 381. Type-species: *Encyrtus clisiocampae* Ashmead, by original designation.  
*Echthrodryinus* Perkins, 1906: 252. Type-species: *Echthrodryinus destructor* Perkins, by monotypy. **Syn. n.**

*Schedius* Howard, 1910: 2. Type-species: *Schedius kuvanae* Howard, by original designation.

*Tetracnemella* Girault, 1915a: 170. Type-species: *Tetracnemella australiensis* Girault, by original designation. **Syn. n.**

*Xesmatia* Timberlake, 1920: 424. Type-species: *Xesmatia flavipes* Timberlake, by original designation. **Syn. n.**

*Pseudolitomastix* Risbec, 1954: 1068. Type-species: *Litomastix creona* Risbec, by original designation.

**DISTRIBUTION AND SPECIES.** About one-hundred species, cosmopolitan; 37 from review area: *alboantennatus* (Subba Rao, 1971: 222) (**comb. n.** from *Pentalitomastix*) (Java), *australiensis* (Girault, 1915a: 170) (**comb. n.** from *Tetracnemella*) (Australia), *batocerae* Ferrière (1936: 333) (Malaysia), *bicolor* Girault (1915a: 78) (Australia), *cochereaui* Prinsloo & Annecke (1978a: 41) (New Caledonia), *corbetti* Ferrière (1931: 284) (Malaysia), *crassulus* Prinsloo & Annecke (1978a: 42) (Samoa), *destructor* (Perkins, 1906: 253) (**comb. n.** from *Echthrodryinus*) (Australia), *erionotae* Ferrière (1931: 284) (India, Malaysia, Java, Mariana Is., Hawaiian Is.), *euxoae* (Girault, 1927a: 2) (**comb. n.** from *Schedius*) (Australia), *ferrierei* Shafee, Alam & Agarwal (1975: 97) (India), *flavipes* (Timberlake, 1920: 425) (**comb. n.** from *Xesmatia*) (Hawaiian Is.), *guamensis* Fullaway (1946: 205) (Mariana Is., Hawaiian Is.), *hyalinipennis* (Dodd, 1917: 354) (**comb. n.** from *Tetracnemella*) (Australia), *inconspicuus* (Girault, 1915a: 141) (**comb. n.** from *Coccidoxenus*) (Australia), *javanicus* Mercet (1922a: 152) (Java), *johnsoni* (Howard, 1898a: 18) (Hawaiian Is.), *lacteiclavus* Girault (1932b: 1) (Australia), *larvarum* (Girault, 1919b: 58) (**comb. n.** from *Paracopidosomopsis*) (Java), *leucocerus* Mercet (1922a: 150) (Java), *major* Ferrière (1931: 285) (Java), *malayensis* Ferrière (1931: 282) (India, Malaysia, Indonesia, Papua New Guinea), *metallicus* Girault (1914a: 37) (Australia), *ovidivorus* (Girault, 1925a: 2) (**comb. n.** from *Echthrodryinus*) (Australia), *pacificus* Waterston (1915: 307) (Fiji), *pallidipes* (Ashmead, 1904a: 15) (**comb. n.** from *Aphidencyrtus*) (Philippines), *papilionidis* (Girault, 1932c: 3) (**comb. n.** from *Stenoteropsis*) (Australia), *papilionis* Ashmead (1905a: 4) (Pakistan, India, Philippines), *phongi* Trjapitzin, Myartseva & Kostjukov (1977: 671) (Vietnam), *podontiae* Gahan (1922: 51) (Java), *segestes* Trjapitzin (1965: 320) (Indonesia), *shakespearei* (Girault, 1923a: 48) (**comb. n.** from *Coccidoxenus*) (Australia), *sphingidarum* Timberlake (1941: 223) (Marquesas Is.), *submetallicus* (Howard; Noyes, 1979: 160) (Hawaiian Is.), *swezeyi* Fullaway (1946: 206) (Mariana Is.), *tricolor* (Girault, 1915a: 140) (**comb. n.** from *Coccidoxenus*) (Australia), and *xanthogaster* (Girault, 1915a: 150) (**comb. n.** from *Echthrodryinus*) (Australia), also much undetermined material from throughout the region (BMNH, BPBM, CNC, GC).

**REFERENCE.** Key to Indo-Malayan species: Trjapitzin et al. (1977: 672–674).

**BIOLOGY.** Parasites of eggs of various insects, notably Lepidoptera and Heteroptera, and of

spiders (Araneida). Several species are also hyperparasites of other Hymenoptera (Dryinidae and Braconidae) parasitising Lepidoptera and Auchenorrhyncha (Homoptera). One group (*guamensis*-group) of species are parasites of Aphididae (Homoptera) and puparia of Syrphidae (Diptera).

COMMENTS. The species previously included in *Echthrodryinus* (see Gordh & Trjapitzin, 1978) almost certainly represent a polyphyletic group since they appear to be more closely related, morphologically, to widely separated species of *Ooencyrtus* than they do to each other, e.g. *Ooencyrtus bucculatricis* (Howard) (**comb. n.**) is more closely related to *Ooencyrtus johnsoni* (Howard) than it is to *destructor* (the type-species of *Echthrodryinus*). Thus in our view the change from egg parasitism to larval parasitism or hyperparasitism must have occurred more than once and probably via different routes. Therefore we can find no reason for retaining *Echthrodryinus* as a distinct genus whose type-species or other included species cannot be reliably separated from species of *Ooencyrtus* other than by an apparent difference in biology.

The *guamensis*-group is an apparently monophyletic group of species found in South America (see Noyes, 1980: 194), Africa, India and Mariana Is. which parasitise syrphid puparia (and also possibly aphids). The species of this group can be distinguished from other species of *Ooencyrtus* by being slightly larger and the colour of the head and thorax always being black or dark brown with a very slight blue or green sheen, the mesoscutum clothed in very conspicuous white or translucent setae and the marginal vein of the forewing always being punctiform and the stigmal vein relatively long. For the present, we prefer to leave these species in *Ooencyrtus* than propose a new genus to accommodate them.

One group consists of species (*bicolor*, *lacteiclavus* and *metallicus*) which are parasites of spiders' eggs. For the present we are leaving these in *Ooencyrtus* although it may be considered that they belong to a genus apart. They can be distinguished from other species of *Ooencyrtus* by the infusate forewings and largely pale brown or orange-brown thorax instead of the usual metallic or dark brown colour typical of *Ooencyrtus*. They differ also in general body shape, especially that of the head.

It is possible that *Scotteus* Masi (1917b) is a synonym of *Ooencyrtus*. The holotype of *ochroleucus* has been examined (BMNH) but unfortunately the body is missing. However, the remaining parts (forewing, antenna and legs) and Masi's description indicate that it may be a species of *Ooencyrtus* with an obliquely truncate clava (species with an obliquely truncate clava are known to occur in the Neotropics).

The genus is placed in the tribe Microteriyini, subtribe Ooencyrtina (Encyrtinae) and can be separated from other closely related genera (including *Trichomasthus* and *Fulgoridicida*) by the characters given in the key.

### **OVALOENCYRTUS gen. n.**

(Key couplets: 133, 470. Figs 67, 68, 225, 382–384)

Type-species: *Ovaloencyrtus fijiensis* sp. n. Gender: masculine.

♀. *Head*. In frontal view slightly broader than long, in profile slightly less than twice as long as broad and anteriorly evenly rounded to top of antennal scrobes, below this almost straight to mouth margin. Eye with moderately conspicuous hairs, each clearly longer than the diameter of a facet, posterior margin of eye imperceptibly concave, eye about one-quarter longer than broad and reaching occipital margin which is sharp. Malar space nearly half as long as eye, with sulcus present. Frontovortex about one-quarter head width; ocelli forming a slightly acute angle, the posterior ones nearly touching eye and separated from occipital margin by about their own major diameters. Antennal scrobes fairly long and narrow, more or less meeting dorsally and reaching about half way from antennal toruli to anterior ocellus, interantennal prominence dorsally acute; antennal torulus separated from mouth margin by a little less than its own length and from other torulus by about its own length, its dorsal margin about level with ventral margins of eyes; clypeus fairly broadly and deeply excised medially. Antennal scape clearly longer than width of frontovortex and broadened and flattened, about three times as long as broad; pedicel conical, about one-third length of scape and clearly longer than any of the funicle segments which are cylindrical and

slightly broadening distally, the first four of which are a little longer than broad or quadrate, the fifth and sixth transverse; clava three-segmented, a little longer than funicle, with a strongly oblique apical truncation with the sutures strongly convergent towards base ventrally; longitudinal sensillae on all flagellar segments except first two, longest setae about as long as diameter of first segment. Frontovortex above antennal scrobes almost completely smooth except for the shallow piliferous punctures, top of scrobes and between scrobes and eyes with shallow, raised, rugose-reticulate to squamiform-reticulate sculpture, interantennal prominence and genae with squamiform-reticulate sculpture, piliferous punctures on lower parts of face deeper than on frontovortex; setae on frontovortex sparse but conspicuous, each longer than diameter of an ocellus. Mandible with two very small teeth and a very broad truncation; maxillary palpus four-segmented, labial palpus three-segmented.

**Thorax.** In side view moderately robust with mesoscutum and scutellum only slightly convex, almost flat; propodeum and metapleurum together quite widely separated from hind coxa by the posterior margin of the mesopleurum which is quite broadly in contact with basal segment of gaster. In dorsal view pronotum broadly concave but not strongly so; visible part of mesoscutum about four-fifths broader than long with notaular lines absent and posterior margin convex and slightly projecting above axillae and thus these appear broadly separated; axillae more or less meeting; scutellum about as long as mesoscutum and a little broader than long, with apex rounded; propodeum medially about one-fifth length of scutellum. Mesoscutum and axillae with shallow, raised, squamiform-reticulate sculpture, scutellum more or less entirely smooth and polished but in anterior one-third or so with extremely shallow reticulate sculpture; mesopleurum smooth and shiny but bordered posteriorly, ventrally and anteriorly by some shallow, irregular, reticulate to rugose sculpture; propodeum with some fairly deep, raised irregular sculpture medially and laterally. Forewing lightly infuscate, pale brown in middle beneath venation and near base, nearly three times as long as broad; linea calva not interrupted or closed; filum spinosum present; submarginal vein with an indistinct apical hyaline break, parastigma not swollen; costal cell about 10 times as long as broad, with a single line of setae dorsally in apical one-third; marginal vein about four times as long as broad, about twice as long as postmarginal and a little shorter than stigmal. Hindwing about three-quarters as long as forewing, about five times as long as broad, with marginal setae about one-third as long as maximum wing width. Mid tibial spur shorter than basal mid tarsal segment.

**Gaster.** Shorter than thorax; cercal plates in anterior half; hypopygium reaching to about four-fifths along gaster; last tergite about two-thirds as long as mid tibia, paratergites absent; ovipositor a little shorter than mid tibia, gonostyli free, about one-quarter as long as ovipositor.

♂. Unknown.

**COMMENTS.** Closely related to *Paratetralophidea* from which it can be separated by the characters given in the key. Also probably related to *Xenoencyrtus* and *Ooencyrtus* (tribe Microteryni, Ooencyrtina) and separated from both by the very long, strongly obliquely truncate clava, relatively long marginal and stigmal veins of the forewing and sharp occipital margin.

### *Ovaloencyrtus fijiensis* sp. n.

(Figs 67, 68, 225, 382–384)

♀. Length: 0.95–1.13 mm (holotype, 1.13 mm).

**Colour.** Head strongly shining metallic green, purple or blue, mesoscutum shining purple, scutellum strongly shining deep blue or green with strong purple reflections; propodeum and mesopleurum dark brown; antenna very dark brown, almost black; all coxae, fore femur, fore tibia and tarsus to a less extent, dark brown, remainder of legs orange-brown; gaster dark brown, basally orange-brown; forewing generally suffused pale brownish, darker in middle across wing from apical one-third of venation, proximal part of basal cell, except extreme base, more or less hyaline (Fig. 68).

**Head.** Relative measurements (holotype): head length 64, head width (facial view) 75, head width (side view) 35, minimum width of frontovortex 20, POL 8, OOL 1.5, malar space 21, length of eye 46, width of eye 38, scape length 45, maximum scape width 14, other proportions of antenna as in Fig. 67, mandible as in Fig. 225. There is a little variation in the relative width of the frontovortex; in smaller specimens it is slightly wider and thus correspondingly the eyes are a little smaller.

**Thorax.** Relative measurements (holotype): forewing length 174, width 65; hindwing length 123, width 26; base of forewing as in Fig. 68, forewing venation as in Fig. 382.

**Gaster.** Relative lengths (paratype): ovipositor 80, last tergite 60, [mid tibia 88]; genitalia as in Fig. 383, hypopygium as in Fig. 384.

♂. Unknown.

DISTRIBUTION. Fiji.

BIOLOGY. Unknown.

**MATERIAL EXAMINED**

Holotype ♀, **Fiji**: Viti Levu, Nausori Highlands, 500–700 m, xi.1976 (*N. L. H. Krauss*) (BPBM).

Paratypes. **Fiji**: 1 ♀, same data as holotype, 26.iii.1970; 1 ♀, Ovalau, Levuka, 0–200 m, xii.1969 (*N. L. H. Krauss*); 1 ♀, Lami, 20–200 m, iii.1976 (*N. L. H. Krauss*); 1 ♀, Lau, Lakomba, 3.ix.1924 (*E. H. Bryan Jr*) (BPBM, BMNH).

**OVIDOENCYRTUS** Girault

(Key couplet: 492)

*Ovidoencyrtus* Girault, 1924a: 7. Type-species: *Ovidoencyrtus pallidipes* Girault, by monotypy.

DISTRIBUTION AND SPECIES. One species, Australia only: *pallidipes* Girault (1924a: 7).

BIOLOGY. Parasites of eggs of Reduviidae (Heteroptera).

COMMENTS. We are unable to place the genus according to Trjapitzin's (1973b) classification of the Encyrtinae.

**PAKSIMMONDSIUS** Ahmad & Ghani

(Key couplet: 134. Fig. 73)

*Paksimmondsius* Ahmad & Ghani, 1974: 391. Type-species: *Paksimmondsius pakistanensis* Ahmad & Ghani, by original designation.

DISTRIBUTION AND SPECIES. One species, Pakistan only: *pakistanensis* Ahmad & Ghani (1974: 392).

BIOLOGY. Parasites of Kermesidae (Homoptera).

COMMENTS. *Paksimmondsius* appears to be related to *Leurocerus* and *Zozoros* and can be separated from these genera by the characters given in the key (see also comments under *Leurocerus* and *Zozoros*).

**PAPUNA** gen. n.

(Key couplet: 346. Figs 190, 385–389)

Type-species: *Papuna nemis* sp. n. Gender: feminine.

♀. *Head*. In facial view about one-quarter broader than long, in profile about one-half longer than broad and gradually and evenly curved dorsally, most strongly curved about level with top of scrobes, below this point almost straight. Eye with posterior margin more or less straight, only a little longer than broad, conspicuously hairy and overreaching occipital margin which is more or less rounded, at least not sharp. Malar space about half length of eye, with sulcus present. Frontovortex a little less than one-third head width; ocelli fairly large, forming an acute angle which is almost an equilateral triangle, the posterior ocellus separated from occipital margin by slightly less than its own diameter and considerably closer to the eye margin. Antennal scrobes moderately deep and elongate, meeting dorsally and reaching about two-thirds from antennal toruli to anterior ocellus; antennal torulus separated from mouth margin by about three-quarters its own length and from other torulus by about one and one-half times its own length, its dorsal margin about level with lowest margin of eye, clypeal margin shallowly excised between toruli. Antennal scape clearly longer than minimum width of frontovortex, slightly flattened and broadened, slightly more than three times as long as broad; pedicel conical, slightly more than one-third length of scape and clearly much longer than any of the funicle segments which are all transverse and nearly equal in length but become much broader apically; clava three-segmented with a strong oblique, apical truncation and much broader than and a little longer than funicle, the sutures strongly converging; longitudinal sensillae on all segments of flagellum; longest setae about as long as diameter of first funicle segment. Frontovortex

with very shallow, raised reticulate sculpture of small mesh, more squamiform-reticulate between eyes and antennal toruli and lower parts of face where it also becomes more longitudinally elongate; frontovertex and lower parts of face clothed in fairly dense, conspicuous setae, each about as long as the diameter of an ocellus. Mandible with two teeth and a truncation or obscurely tridentate; maxillary palpus four-segmented, labial palpus three-segmented.

**Thorax.** In side view with mesoscutum and scutellum quite flat, the metapleurum together with the propodeum quite broadly in contact with hind coxa. In dorsal view posterior margin of pronotum quite strongly concave and slightly angled medially; visible part of mesoscutum about one-half broader than long, notaular lines absent, its posterior margin angled outwards medially; axillae meeting; scutellum a little shorter than mesoscutum and a little broader than long, its apex rounded; propodeum medially about one-eighth as long as scutellum, laterally with fairly dense setae almost completely surrounding the spiracle, except posteriorly. Dorsum of thorax with sculpture similar to frontovertex, but perhaps of slightly larger mesh, mesopleurum almost smooth but with some very shallow, irregular sculpture; propodeum medially with numerous, shallow, incomplete carinae, laterally with irregular, raised, rugose sculpture; dorsum of thorax with setae of similar length, colour and density to those on frontovertex. Forewing more or less hyaline but very faintly suffused brownish, nearly three times as long as broad; lineae calva not interrupted or closed; filum spinosum present; submarginal vein with an apical hyaline break, parastigma very slightly and conspicuously swollen; costal cell about 15 times as long as broad, with a single line of setae dorsally in its apical half; marginal vein about six times as long as broad, subequal to stigmal, both a little shorter than postmarginal. Hindwing about two-thirds as long as forewing, about four times as long as broad, with marginal setae about one-fifth as long as maximum wing width. Mid tibial spur slightly shorter than basal mid tarsal segment.

**Gaster.** Without exerted part of ovipositor about as long as thorax, exerted part of ovipositor about one-third as long as gaster; cercal plates in anterior half of gaster; hypopygium with apex a little more than half way along gaster; last tergite produced apically, very pointed, slightly longer than mid tibia; ovipositor about twice as long as mid tibia or gonostyli; gonostyli free.

♂. Unknown.

**COMMENTS.** Placement of this genus according to Trjapitzin's classification of the Encyrtinae is difficult. The structure of the antenna is very similar to that found in the Tyndarichina (Cheiloneurini, see Trjapitzin & Gordh, 1980), but differs from these in the structure of the mandible, wing venation and the mesopleurum not being posteriorly enlarged. It is most probable that this genus is related to *Pseudencyrtus* (Microteryni, Pseudencyrtina), having a similar structure of the gaster (e.g. elongate last tergite), thorax, mandible and head. It differs from *Pseudencyrtus* in forewing venation (e.g. postmarginal vein longer than stigmal, smaller angle between stigmal and postmarginal veins), narrower hindwing (in *Pseudencyrtus* it is not much more than three times as long as broad), narrower frontovertex (*Pseudencyrtus* has the frontovertex more than one-third head width) and antenna.

### *Papuna nemis* sp. n.

(Figs 190, 385–389)

♀. Length (excluding ovipositor): 1.98–2.03 mm (holotype, 2.03 mm).

**Colour.** Frontovertex deep metallic blue-green with purple reflections around eyes, below top of toruli more green with blue or purple reflections, antennal scrobes above toruli coppery; antenna with scape yellow, pedicel apically testaceous, basal part of pedicel and flagellum dark brown; mesoscutum dull shining dark blue with purple reflections, axillae brownish purple with brassy reflections; scutellum dull shining blue-green with apex distinctly more shiny green with brassy reflections; mesopleurum dark chestnut-brown; legs with all coxae and femora dark brown, fore femur apically yellowish, mid femur with a pale sub-basal ring, all tibiae and tarsi yellow; propodeum and gaster (including ovipositor sheaths) dark brown, the gaster with strong brassy purple reflections; apex of ovipositor sheaths yellowish.

**Head.** Head in facial view as in Fig. 387, mandible as in Fig. 388. Relative measurements (holotype): head length 85, head width (facial view) 103, head width (side view) 52, minimum frontovertex width 30, malar space 34, eye length 61, eye width 54, POL 13, OOL 2, scape length 41, scape width 13, proportions of antenna as in Fig. 385.

**Thorax.** Relative measurements (holotype): forewing length 278, width 100, base of forewing as in Fig. 386, venation as in Fig. 190; hindwing length 175, width 45.

*Gaster*. Relative lengths (paratype): last tergite 60, ovipositor 118, [mid tibia 53]; genitalia as in Fig. 389. ♂. Unknown.

DISTRIBUTION. Papua New Guinea.

BIOLOGY. Unknown.

MATERIAL EXAMINED

Holotype ♀, **Papua New Guinea**: Morobe Province, Lasanga I., x.1979 (*J. H. Martin*) (BMNH).

Paratype. **Papua New Guinea**: 1 ♀, Morobe Province, Buso Forest, x.1979 (*J. H. Martin*) (BMNH).

**PARABLASTOTHRIX** Mercet

(Key couplet: 15)

*Parablastothrix* Mercet, 1917d: 538. Type-species: *Parablastothrix vespertinus* Mercet, by monotypy.

DISTRIBUTION AND SPECIES. Fourteen species, cosmopolitan; three species from review area: *magnioculus* (Girault, 1923a: 47) (**comb. n.** from *Schedius*) (= *Paracaenocercus albifemur* Girault, 1922b: 103 **syn. n.**) (Australia), *nepticulae* Hedqvist (1976: 50) (Sri Lanka) and *unicinctipes* (Girault, 1915a: 111) (**comb. n.** from *Schedius*) (Australia), also further undetermined material from Bismark Archipelago, Solomon Is. and Australia (BMNH, BPBM, QM, ANIC).

REFERENCE. Key to Holarctic species: Loginovskaya (1981: 160–162).

BIOLOGY. Parasites of larvae of Lyonetiidae and Nepticulidae (Lepidoptera).

COMMENTS. Trjapitzin & Gordh (1978b) erected the new subtribe Parablastothrichina within the tribe Copidosomatini (Encyrtinae) to accommodate *Parablastothrix* and *Calometopia*. However, we think that the genera of this subtribe (including also *Mashhoodiella*) are morphologically closer to the Aphycina (tribe Aphycini) than they are to the Copidosomatini.

**PARABLATTICIDA** Girault

(Key couplets: 42, 175, 195, 212. Figs 390–395)

*Parablatticida* Girault, 1915a: 117. Type-species: *Parablatticida pachyscapa* Girault, by original designation.

*Holanusia* Girault, 1915a: 162. Type-species: *Holanusia convexus* Girault, by original designation. **Syn. n.**

*Symphycus* Masi, 1917b: 149. Type-species: *Symphycus aphycoides* Masi, by monotypy. **Syn. n.**

*Geniaspidius* Masi, 1917b: 155. Type-species: *Geniaspidius viduus* Masi, by monotypy. **Syn. n.**

*Amaurilyma* Graham, 1958: 153. Type-species: *Encyrtus brevicornis* Dalman, by original designation. **Syn. n.**

*Desobius* Noyes, 1980: 192. Type-species: *Desobius convexus* Noyes, by original designation. **Syn. n.**

DISTRIBUTION AND SPECIES. Seven species, Neotropical, Palaearctic, Afrotropical, Oriental and Australasian; one from review area: *pachyscapa* Girault (1915a: 117) (= *Holanusia convexus* Girault, 1915a: 162 **syn. n.**) (Australia), also much undetermined material, including many undescribed species, from India and Taiwan to Samoa and Australia (BMNH, BPBM, ANIC, HC).

BIOLOGY. Unknown.

COMMENTS. Examination of material from throughout the region has shown that the species previously placed in *Desobius* fall within our concept of the range of variation within *Parablatticida*. We have found that differences in sculpture of the mesoscutum and relative position of the hypopygium are not consistent and therefore regard *Desobius* as a synonym of *Parablatticida*.

The holotype male of *Geniaspidius viduus* Masi (BMNH) belongs to *Parablatticida* (**comb. n.**) and to the same species-group as *trinidensis* (**nom. n.** for *convexus* Noyes, 1980 nec Girault, 1915), characterised by the striate-reticulate sculpture of the mesoscutum and generally smaller size.

We have examined the four syntypes of *Symphycus aphycoides* Masi (BMNH, ZMUC, MCSN). The female from ZMUC is here designated LECTOTYPE and has been so labelled. It is in several fragments glued on a card rectangle but is more or less complete. It falls within our concepts of the limits of *Parablatticida* and therefore we believe that the two genera are synonymous. The single male syntype is not congeneric.

*Parablatticida brevicornis* (Dalman) (**comb. n.**) is very close to *pachyscapa* Girault and differs only very slightly in the relative width of the scape and frontovertex. More detailed study may show that these differences fall within the range of variation of *brevicornis*.

We are unable to place the genus, although it may be related to *Exoristobia* or *Phauloencyrtus*.

### **PARACERAPTROCERUS** Girault

(Key couplet: 113)

*Paraceraptocherus* Girault, 1920c: 184. Type-species: *Paraceraptocherus africanus* Girault, by original designation.

**DISTRIBUTION AND SPECIES.** Fourteen species, Neotropical, West Palaearctic, Afrotropical, Oriental; two species from review area: *brevicaudatus* (Subba Rao, 1965a: 74) (India) and *italicus* (Masi, 1917a: 80) (India).

**REFERENCE.** Revision: Annecke (1967: 130–156).

**BIOLOGY.** Parasites of Coccidae (Homoptera).

**COMMENTS.** The genus is very close to *Anicetus* (tribe Cerapterocerini) and possibly should be considered synonymous. Annecke (1967: 100–101) provides a key to distinguish this genus from its relatives.

### **PARACHALCERINYS** Girault

(Key couplet: 497)

*Parachalcerinys* Girault, 1925b: 97. Type-species: *Parachalcerinys nonaericornis* Girault, by monotypy.

**DISTRIBUTION AND SPECIES.** Two species, both Australian: *coccidoxenoides* Girault (1926c: 130) and *nonaericornis* Girault (1925b: 97).

**BIOLOGY.** Unknown.

**COMMENTS.** Girault (1926c: 130) stated that the type-species of *Parachalcerinys* was *coccidoxenoides* but since the description of *Parachalcerinys nonaericornis* was published the previous year, *nonaericornis* must be taken as the type-species.

The two species included here may belong to different genera; *coccidoxenoides* possibly to *Australia* (see comments under *Australia*) and *nonaericornis* to *Psyllaephagus*. However, until fresh material can be carefully compared with the types of the two included species we prefer to retain them in the present combination and thus treat *Parachalcerinys* as a valid genus.

### **PARACLADELLA** Girault

(Key couplets: 422, 429)

*Paracladella* Girault, 1920d: 142. Type-species: *Paracladella globosa* Girault, by monotypy.

**DISTRIBUTION AND SPECIES.** Two species, Australia only: *giorgionei* Girault (1932a: 4) and *globosa* Girault (1920d: 142).

**BIOLOGY.** Unknown.

**COMMENTS.** The holotype male of *globosa* (QM) is in extremely poor condition, but may be the male of *giorgionei*.

*Paracladella* belongs to the same group of genera as *Anagyrodes* (see comments under *Anagyrodes*) and is probably most closely related to *Neocladia* (tribe Neocladiini). It can be separated from related genera by having a mandible with a single long tooth (which may have a short subapical second tooth), a solid clava and forewing with a punctiform marginal vein.

### **PARACLAUSENIA** Hayat

(Key couplets: 265, 502. Figs 151, 396, 397)

*Paraclausenia* Hayat, 1980: 637. Type-species: *Paraclausenia herbicola* Hayat, by original designation.

DISTRIBUTION AND SPECIES. One described species, India only: *herbicola* Hayat (1980: 639), also further undetermined material, which may include an undescribed species, from India and S. China (BMNH, BPBM).

BIOLOGY. Unknown.

COMMENTS. This genus belongs to the tribe Charitopidini (Tetracneminae).

### **PARAENASOMYIA** Girault

(Key couplets: 302, 342, 433, 456. Fig. 178)

*Paraenasomyia* Girault, 1915a: 110. Type-species: *Paraenasomyia orro* Girault, by monotypy.

DISTRIBUTION AND SPECIES. Three species, Australia only: *australiensis* (Girault, 1914b: 59) (**comb. n.** from *Copidosoma*) (= *Cerchysius bellulus* Girault, 1915a: 84), *johnsoni* Girault (1922f: 1) and *orro* Girault (1915a: 110).

BIOLOGY. Parasites of galls of Cecidomyiidae (Diptera).

COMMENTS. Girault (1917e: 95) synonymised *bellulus* and *australiensis*. Comparison of the descriptions of both species indicates that he must have inadvertently described the same specimen twice under two different names.

Its biology, wing venation and general morphology indicate that the genus is probably related to *Pseudencyrtus* (Microterytini, Pseudencyrtina).

### **PARALEPTOMASTIX** Girault

(Key couplet: 459)

*Paraleptomastix* Girault, 1915a: 168. Type-species: *Paraleptomastix thoreauini* Girault, by original designation.

DISTRIBUTION AND SPECIES. One species Australia only: *thoreauini* Girault (1915a: 168).

BIOLOGY. Unknown.

COMMENTS. Belongs to the same group of genera as *Anagyrodes* (see comments under *Anagyrodes*) and is probably most closely related to *Neocladia* (tribe Neocladiini). It can be separated from related genera by having a mandible with a long single tooth (possibly with a smaller subapical tooth), a three-segmented clava, forewing with a relatively long marginal vein and hypopygium reaching the apex of the gaster.

### **PARALITOMASTIX** Mercet

(Key couplet: 498)

*Paralitomastix* Mercet, 1921: 438. Type-species: *Encyrtus varicornis* Nees, by original designation.

DISTRIBUTION AND SPECIES. Sixteen species, cosmopolitan; three from review area: *bicoloricornis* (Girault, 1915a: 104) (**comb. n.** from *Coccidencyrtus*) (Australia), *ipswichia* (Girault,

1923d: 2) (**comb. n.** from *Coccidencyrtus*) (Australia) and *varicornis* (Nees; Mercet, 1921: 439) (Pakistan, India), also some undetermined material from Australia (BMNH).

**BIOLOGY.** Polyembryonic parasites of larvae of Pyralidae and Gelechiidae (Lepidoptera).

**COMMENTS.** Placed in the tribe Copidosomatini, subtribe Copidosomatina (Encyrtinae) and should very probably be considered synonymous with *Copidosoma*. The genus can be distinguished from *Copidosoma* solely on the bicolorous antennal flagellum since several species near *Copidosoma koehleri* Blanchard have sculpture on the scutellum similar to those species placed in *Paralitomastix* (a character sometimes used to separate the two genera).

### **PARANATHRIX** Myartseva

(Key couplets: 145, 227, 270)

*Paranathrix* Myartseva, 1980: 722. Type-species: *Anathrix acanthococci* Myartseva, by original designation.

**DISTRIBUTION AND SPECIES.** Two species, Palaearctic, Oriental and Australasian; one from review area: *thailandicus* (Myartseva, 1979: 1746) (Thailand), also much undetermined material, including several undescribed species, from Bangladesh to the Solomon Is. and Australia (BMNH, BPBM, CNC).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** The species listed as *Dinocarsis* sp. by Tandon & Srivastava (1980) probably belongs to this genus (Subba Rao, pers. comm.).

*Paranathrix* belongs in the tribe Anagyrini, subtribe Anagyrina (Tetracneminae) and can be separated from related genera by the characters given in the key, in particular the pattern of silvery setae on the scutellum.

### **PARAPHAENODISCUS** Girault

(Key couplets: 92, 136, 380)

*Paraphaenodiscus* Girault, 1915a: 93. Type-species: *Paraphaenodiscus verus* Girault, by original designation.

**DISTRIBUTION AND SPECIES.** Nine species, Afrotropical, Oriental and Australasian; three from review area, all Australian: *parus* (Girault, 1915a: 93) (**comb. n.** from *Encyrtus*), *verus* Girault (1915a: 93) and *wundti* (Girault, 1915a: 92), also two further, undescribed, species from India and Malaysia (BMNH).

**REFERENCE.** Revision of southern African species: Prinsloo (1976a); Prinsloo & Myndardt (1982).

**BIOLOGY.** Parasites of Coccidae (Homoptera).

**COMMENTS.** The genus is near *Microterys* (Microterysiini, subtribe Microterysiina) and can be separated by the characters given in the key, in particular the presence of an apical flange on the scutellum which is absent in *Microterys* (see Prinsloo, 1976a: 161).

### **PARAPHYCUS** Girault

(Key couplets: 166, 285)

*Paraphycus* Girault, 1915a: 97. Type-species: *Paraphycus abnormiscapus* Girault, by original designation.

**DISTRIBUTION AND SPECIES.** One species, Australia only: *abnormiscapus* Girault (1915a: 97).

**BIOLOGY.** Unknown.

**COMMENTS.** The genus is the type-genus of the subtribe Paraphycina Hoffer, 1955 (tribe

Aphycini). However, this is based on a misidentification of the genus by Mercet (1921: 232) who incorrectly included the species *flavovarius* in *Paraphycus*. This species has since been transferred to *Xenaphycus* Trjapitzin.

The systematic position of *Paraphycus* cannot be accurately ascertained since the holotype female of *abnormiscapus* is lacking its head. The parts that remain suggest that it quite possibly may belong in the tribe Aphycini, but doubtfully to the subtribe Paraphycina as understood at present. The genus should be easily recognisable from the parts that remain and Girault's description.

### **PARARHOPELLA** Girault

(Key couplet: 71)

*Pararhopella* Girault, 1923c: 144. Type-species: *Metalonella longfellowi* Girault, by original designation.

DISTRIBUTION AND SPECIES. Two species, both Australian: *longfellowi* (Girault, 1915a: 77) and *maculatipes* Girault (1923c: 144); possibly one further species from Australia (BMNH).

BIOLOGY. Unknown.

COMMENTS. The genus is close to *Mesorhopella* Girault (see comments under *Mesorhopella*).

### **PARASCHEDIUS** Mercet

(Key couplets: 259, 311. Figs 180, 398, 399)

*Paraschedius* Mercet, 1925b: 328. Type-species: *Paraschedius ductor* Mercet, by original designation.

DISTRIBUTION AND SPECIES. Four species, Palaearctic; two undescribed species from India and Java (BMNH, BPBM).

BIOLOGY. Parasites of Diaspididae (Homoptera).

COMMENTS. *Paraschedius* can probably best be placed in the tribe Habrolepidini, subtribe Comperiellina (Encyrtinae).

### **PARASTENOTERYS** Girault

(Key couplet: 466)

*Parastenoterys* Girault, 1915a: 165. Type-species: *Parastenoterys punctatus* Girault, by original designation.

DISTRIBUTION AND SPECIES. One species, Australia only: *punctatus* Girault (1915a: 165).

BIOLOGY. Unknown.

COMMENTS. The genus belongs to the same group as *Rhytidothorax*, *Tachinaephagus* and possibly *Hexencyrtus* which could probably be accommodated within the subtribe Coenocercina of the Bothriothoracini (Encyrtinae). This group can be characterised by the normally relatively long propodeum and forewing with a fairly long marginal vein, stigmal vein and postmarginal vein, the stigmal vein usually fairly straight and forming an angle of less than 45° with the postmarginal. The hypopygium often reaches the apex of the gaster. *Parastenoterys* can easily be recognised because of the characteristic sculpture of the mesopleurum, the extremely elongate, relatively heavily sculptured propodeum and infusate forewings.

### **PARATETRACNEMOIDEA** Girault

(Key couplet: 280. Figs 170, 171)

*Paratetracnemoidea* Girault, 1915a: 166. Type-species: *Paratetracnemoidea breviventris* Girault, by original designation.

*Rhinoencyrtus* Mercet, 1918: 234. Type-species: *Rhinoencyrtus malenotti* Mercet, by monotypy. **Syn. n.**

INCLUDED SPECIES. Two species, Palaearctic, Afrotropical, Oriental, Australasian; one species from review area: *breviventris* Girault (1915a: 166) (Australia), also undetermined material from India and Vietnam (BMNH, BPBM).

BIOLOGY. Unknown.

COMMENTS. Trjapitzin (1973a) incorrectly places the genus in the Tetracneminae as type-genus of the tribe Rhinoencyrtini. Examination of material by phase-contrast shows the absence of paratergites and also that the ovipositor structure is similar to that found in genera of the Copidosomatini (Encyrtinae). Furthermore, the venation and arrangement of the sensillae at the apex of the stigmal vein suggest an affinity with the Copidosomatini. General body shape and morphology is also not unsimilar to *Cowperia* (Bothriothoracini) and it may be that the present genus shows an unsuspected link between these two tribes.

### **PARATETRALOPHIDEA** Girault

(Key couplets: 133, 463. Figs 69–71)

*Paratetralophidea* Girault, 1915a: 168. Type-species: *Paratetralophidea ornatipennis* Girault, by original designation.

DISTRIBUTION AND SPECIES. One species, Australia only: *ornatipennis* Girault (1915a: 169), also at least two further species from Australia and Indonesia (BMNH, BPBM).

BIOLOGY. The species from Indonesia (Seram I.) has been reared from heteropteran eggs possibly belonging to the family Coreidae (Heteroptera).

COMMENTS. The genus is closely related to *Ovaloencyrtus* and probably also *Xenoencyrtus* and *Ooencyrtus* (Microteriyini, subtribe Ooencyrtina) from which it can be separated by the characters given in the key.

### **PARECHTHRODRYINUS** Girault

(Key couplet: 417. Figs 206, 207)

*Parechthrodryinus* Girault, 1916c: 480. Type-species: *Parechthrodryinus convexus* Girault, by original designation.

DISTRIBUTION AND SPECIES. Eight species, Palaearctic, Afrotropical, Oriental and Australasian; five species from review area: *albiclavatus* (Shafee, Alam & Agarwal, 1975: 63) (India), *clavicornis* (Cameron, 1913: 101) (India, Sri Lanka), *convexus* Girault (1916c: 480) (Java), *hemiaspidoproctis* (Subba Rao, 1967: 5) (India) and *nigriclavatus* (Shafee, Alam & Agarwal, 1975: 60) (India).

REFERENCE. Review of Indian species: Shafee *et al.* (1975: 59–63).

BIOLOGY. Parasites of Coccidae and Keriidae (Homoptera).

COMMENTS. Placed in the tribe Cheiloneurini (Encyrtinae), it is very close to *Tyndarichus* from which it can be very difficult to separate if the biology is not known (see characters given in key) (see also comments under *Tyndarichus*).

### **PAECTROMOIDEA** Girault

(Key couplets: 83, 119, 147, 157, 245, 386. Figs 79, 400)

*Paectromoidella* Girault, 1915a: 175. Type-species: *Paectromoidella thackerayi* Girault, by monotypy. *Eucheiloneuropsis* Girault, 1922b: 104. Type-species: *Eucheiloneuropsis lotae* Girault, by original designation.

DISTRIBUTION AND SPECIES. Nine species, all Australian: *abnormis* (Girault, 1917g: 136) (**comb. n.** from *Dinocarsis*), *acaciae* Girault (1931: 1), *holbeini* (Girault, 1923e: 6) (**comb. n.** from

*Dinocarsis*), *laticincta* (Girault, 1932a: 3) (**comb. n.** from *Epanusia*), *lotae* (Girault, 1922b: 105), *lowelli* (Girault, 1922b: 105) (**comb. n.** from *Eucheiloneuropsis*), *pacorus* (Walker, 1839: 39) (**comb. n.** from *Encyrtus*), *regalis* (Girault, 1922b: 106) (**comb. n.** from *Eucheiloneuropsis*) and *thackerayi* Girault (1915a: 175), also many other species from New Caledonia, Australia and New Zealand (BMNH, BPBM, UCR, DSIR).

REFERENCE. Noyes (1978: 551–552).

BIOLOGY. Unknown.

COMMENTS. The single extant male of *Encyrtus pacorus* Walker is here designated LECTO-TYPE (BMNH) and has been so labelled; it belongs to *Parectromoidella*.

The holotype female of *Dinocarsis abnormis* cannot be located but from the description it must belong to *Parectromoidella*.

The genus belongs to the same group as *Epanusia*, *Cryptanusia* and *Cyrtocoryphes* (see comments under *Cryptanusia*).

### **PARECTROMOIDES** Girault

(Key couplets: 326, 447)

*Parectromoides* Girault, 1915a: 171. Type-species: *Parectromoides magniscutellum* Girault, by original designation.

DISTRIBUTION AND SPECIES. Two species, Australia only: *magniscutellum* Girault (1915a: 171) and *varipes* (Girault, 1915a: 166) (**comb. n.** from *Parastenoterys*), also further undetermined material from Australia and New Zealand (BMNH, DSIR, QM, ANIC).

BIOLOGY. Unknown.

COMMENTS. Close to *Clausenia* (here placed in the tribe Charitopidini, Tetracneminae) and superficially very similar. It differs mainly in having very much deeper, more irregular sculpture on the head and dorsum of thorax, the forewing with a filum spinosum present (very unusual in the Tetracneminae) and the gaster relatively shorter and more apically rounded (acute in *Clausenia*).

### **PARENCYRTOMYIA** Girault

(Key couplets: 232, 372, 463. Fig. 137)

*Parencyrtomyia* Girault, 1915a: 111. Type-species: *Parencyrtomyia niveiclava* Girault, by original designation.

DISTRIBUTION AND SPECIES. One species, Australia only: *niveiclava* Girault (1915a: 111), also undetermined material, including at least one undescribed species, from Vietnam, Solomon Is. and Papua New Guinea (BPBM).

BIOLOGY. Unknown.

COMMENTS. We are unable to place the genus according to Trjapitzin's (1973b) classification of the Encyrtinae, but possibly it belongs to the same group of genera as *Tachinaephagus*, *Rhytidothorax* and *Parastenoterys* (see comments under *Parastenoterys*). It differs from these genera in having a relatively shorter propodeum and the hypopygium not extending more than half way along the gaster. It may also be related to *Aseirba*, *Hemileucocerus* and *Austroencyrtus* (see comments under *Aseirba*).

### **PASULINIA** gen. n.

(Key couplet: 440. Figs 228–230, 401–406)

Type-species: *Pasulinia gentha* sp. n. Gender: feminine.

♀. *Head*. In facial view clearly broader than long, in profile about one-half longer than broad, almost straight from mouth margin to about half way up antennal scrobes and then gradually curved inwards in a near semicircle to occipital margin. Eye with posterior margin very slightly concave, almost straight, only slightly longer than broad, with sparse inconspicuous setae each not longer than the diameter of a facet and not clearly separated from occiput by a more or less rounded occipital margin. Malar space about half eye length, with sulcus present. Frontoververtex between one-fifth and one-quarter head width; ocelli forming an angle of about 45°, the posterior ones nearly four times their own diameter from occipital margin and a little less than their diameters from eye margin. Antennal scrobes shallow, meeting dorsally and reaching slightly more than half way from antennal toruli to anterior ocellus; antennal torulus separated from mouth margin by about its own length and from other torulus by about one and one-half times its own length, its dorsal margin about level with ventral eye margins; clypeal margin almost straight but extremely shallowly excised medially. Antennal scape much longer than minimum width of frontoververtex, subcylindrical, nearly five times as long as broad, pedicel conical and slightly more than one third length of scape and about twice as long as any of the funicle segments, the first three of which are a little longer than broad, subquadrate, the last three of which are clearly transverse, the funicle distinctly widening distally; clava three-segmented, more or less obliquely truncate, the outer suture clearly converging with inner one, clava about two-thirds length of funicle; longitudinal sensillae on all flagellar segments except the first. Frontoververtex with shallow, raised, reticulate sculpture, at top of scrobes more or less squamiform-reticulate and between eyes and genae becoming more longitudinally elongate; setae on frontoververtex dark, sparse and not conspicuous. Mandible with one very small lower tooth and a very broad truncation, almost edentate; maxillary palpus three-segmented, labial palpus two-segmented.

*Thorax*. In side view slightly dorso-ventrally flattened with mesopleurum and propodeum narrowly in contact with hind coxa and dorsally with mesoscutum and scutellum very flat. In dorsal view with posterior margin of pronotum very concave, strongly angled centrally; visible part of mesoscutum about one-half broader than long, with notaular lines absent, with posterior margin almost straight but produced a little posteriorly; axillae more or less meeting; scutellum very slightly broader than long, a little shorter than mesoscutum, with apex broadly rounded; propodeum medially about one-quarter length of scutellum. Mesoscutum with moderately deep, raised reticulate sculpture; scutellum with distinctly deeper, raised, reticulate sculpture of slightly smaller mesh; propodeum medially with shallow, irregular, raised reticulate sculpture; mesopleurum with moderately deep, raised, reticulate sculpture. Forewing hyaline, but faintly suffused yellow in middle one-third or so, wing about three times as long as broad, lineae calva not interrupted or closed, filum spinosum present; venation yellowish brown; submarginal vein without a conspicuous hyaline break and not swollen apically; marginal vein about four or five times as long as broad, clearly longer than stigmal; postmarginal vein almost absent; costal cell nearly 25 times as long as broad, with a single line of setae in its apical one-sixth. Hindwing about four-fifths length of forewing, about five and one-half times as long as broad, with marginal fringe about one-half maximum wing width. Mid tibial spur a little shorter than basal mid tarsal segment.

*Gaster*. About as long as thorax with cercal plates in anterior half, ovipositor hardly exerted, hypopygium reaching to about two-thirds to three-quarters along gaster; paratergites absent, last tergite about two-thirds length of mid tibia; gonostyli free, about one-quarter as long as ovipositor which is nearly as long as mid tibia.

♂. Unknown.

COMMENTS. The shape of the mandible and head, and the forewing venation suggest that this genus is related to *Coccidencyrtus* (tentatively placed in the Habrolepidini by Trjapitzin, 1973), but also possibly related to *Zaomma* and *Mahencyrtus* (placed in the Cheiloneurini). *Pasulinia* can be separated from *Coccidencyrtus* by the relatively narrow frontoververtex and structure of the clava (long and apically rounded with sutures parallel in *Coccidencyrtus*), and from the genera of the Cheiloneurini by the structure of the mandible.

***Pasulinia gentha* sp. n.**

(Figs 228–230, 401–406)

♀. Length: 0.86–1.03 mm (holotype, 1.03 mm).

*Colour*. Head black with purple reflections, slightly brassy or greenish on lower parts of face; antenna with scape testaceous yellow, pedicel and flagellum pale brown to dark brown; pronotum black with some slight brassy reflections, mesoscutum shining blue-green edged purplish, anteriorly more greenish, axillae

black with green, brassy or purple reflections, scutellum shining green slightly mixed coppery anteriorly and apically; forewing hyaline, slightly suffused pale yellow in middle one-third; legs excluding fore coxa completely yellow to slightly dusky orange, fore coxa brown; gaster dark purplish brown with some slight brassy reflections, basal tergite and venter mostly orange; exerted part of gonostyli orange-brown.

*Head.* Relative measurements (holotype): head length 49, head width (facial view) 58, head width (side view) 33, minimum frontovertex width 14, malar space 19, eye length 36, eye width 32, POL 4.5, OOL 2, scape length 27, scape width 6, other proportions of antenna as in Fig. 230; mandible as in Fig. 229; head in side view as in Fig. 228.

*Thorax.* Relative measurements (holotype): forewing length 132, width 45, other proportions of forewing as in Fig. 401; hindwing length 104, width 18; forewing as in Fig. 401, sculpture of mesoscutum and scutellum as in Figs 402, 403, mid tibia and tarsus as in Fig. 405.

*Gaster.* Relative lengths (paratype): last tergite 34, ovipositor 45, gonostyli 11, [mid tibia 50]; genitalia as in Fig. 406, hypopygium as in Fig. 404.

♂. Unknown.

DISTRIBUTION. India, Sulawesi, Papua New Guinea.

BIOLOGY. Unknown.

#### MATERIAL EXAMINED

Holotype ♀, **Sulawesi:** Tengah, nr Morowali, Ranu River Area, ii.1980, lowland rain forest, Malaise trap (*M. J. D. Brendell*) (BMNH).

Paratypes. **Sulawesi:** 1 ♀, Tengah, same data as holotype, iii.1980 (*M. J. D. Brendell*). **Papua New Guinea:** 1 ♀, East Highlands, Kundiawa, 6.i.1965, Malaise trap (*J. Sedlacek*). **India:** 1 ♀, Kerala, Periyar Animal sanctuary, 5–15.x.1979 (*J. S. Noyes*) (BMNH, BPBM).

### *PENTACLADOCERUS* Erdős

(Key couplet: 355)

*Pentacladocerus* Erdős, 1963: 287. Type-species: *Pentacladocerus matranus* Erdős, by original designation.

DISTRIBUTION AND SPECIES. Three species, Palaearctic, plus one unidentified specimen from India (BMNH).

REFERENCE. Review of species: Trjapitzin (1968: 111–114).

BIOLOGY. Unknown.

COMMENTS. Placed in the Bothriothoracini, subtribe Coenocercina and separated from the nearest related genera (*Cerchysiella* and *Zaommoencyrtus*) by the character given in the key.

### *PENTELICUS* Howard

(Key couplets: 121, 207. Fig. 126)

*Pentelicus* Howard, 1895: 611. Type-species: *Pentelicus aldrichi* Howard, by monotypy.

*Hemaenasius* Ashmead, 1900b: 374. Type-species: *Hemaenasius confusus* Ashmead, by original designation. **Syn. n.**

*Epaenasomyia* Girault, 1917d: 3. Type-species: *Epaenasomyia varicornis* Girault, by original designation. **Syn. n.**

*Cowperella* Girault, 1935: 4. Type-species: *Cowperella aeneifrons* Girault, by monotypy. **Syn. n.**

DISTRIBUTION AND SPECIES. Five species, Holarctic and Australian; one species from review area: *aeneifrons* (Girault, 1935: 4) (**comb. n.** from *Cowperella*) (Australia), also undetermined material from India and Taiwan to Australia (BMNH, BPBM).

REFERENCES. Notes on species: Trjapitzin & Gordh (1979), Khlopunov (1979).

BIOLOGY. Unknown.

COMMENTS. We can see no reason for retaining *Hemaenasius* as a distinct genus from *Pentelicus*.

The only major difference between the two genera is the presence of deep piliferous punctures on the head and dorsum of thorax in *Pentelicus* and their absence in the described species of *Hemaenasius*. The undetermined material mentioned above shows virtually a complete range from almost totally smooth sculpture to deeply punctured sculpture.

The classification of Trjapitzin & Gordh (1978b) is curious. They place *Hemaenasius* in the subtribe Hemaenasiina (Discodini) and *Pentelicus* in the subtribe Bothriothoracina (Bothriothoracini), probably because of the difference in sculpture of the described species. *Pentelicus* (as understood here) is probably related to *Leurocerus*, *Proleurocerus*, etc. (see comments under *Leurocerus*) and can be distinguished from these and related genera by the presence of a very shallow median longitudinal ridge or carina along the scutellum.

### **PHAULOENCYRTUS** Girault

(Key couplet: 201. Fig. 120)

*Phauloencyrtus* Girault, 1940: 150. Type-species: *Phauloencyrtus mirisimilis* Girault, by monotypy.

DISTRIBUTION AND SPECIES. One species only, Australasia: *mirisimilis* Girault (1940: 50) (Sarawak, Australia).

BIOLOGY. Unknown.

COMMENTS. We are unable to place the genus, but the very hairy eyes and structure of the antenna suggest that it may be related to *Exoristobia* or *Parablatticida*.

### **PHILOSINDIA** gen. n.

(Key couplet: 160. Figs 89, 90, 407–410)

Type-species: *Philosindia longicornis* sp. n. Gender: feminine.

♀. *Head*. In facial view a little broader than long, in profile about twice as long as broad, gently curved to top of antennal toruli then strongly curved at top of toruli and almost straight below this, thus the straight part being nearly twice as long as the curved part. Eye with posterior margin straight or very slightly concave, about one-quarter longer than broad, almost naked but with a few sparse, short setae, each much shorter than the diameter of a facet, eye reaching or slightly overreaching occipital margin which is sharp. Malar space a little shorter to distinctly longer than half length of eye, with sulcus absent or present. Frontovortex from one-quarter to about one-half head width; ocelli large, more or less forming a right angle; posterior ocellus much less than to about its own diameter from occipital or eye margin, or much closer to eye margin. Antennal scrobes almost non-existent, not meeting dorsally, separated by a fairly sharp interantennal prominence and reaching slightly less than half way from toruli to anterior ocellus; antennal torulus separated from mouth margin by at least one and one-half times its own length and from other torulus by about two-thirds its own length, its ventral margin clearly above or rarely well below ventral margins of eyes; clypeal margin broadly but shallowly excised in middle. Antennal flagellum long, about two to three times as long as head width; scape shorter or slightly longer than minimum width of frontovortex, about three times as long as broad; pedicel conical and subquadrate, clearly much shorter than any of the funicle segments which are subequal in size; clava three-segmented or with segments separated and similar in appearance to funicle so that flagellum has an undifferentiated, nine-segmented appearance; longitudinal sensillae very distinct, present on all flagellar segments; longest setae on flagellum about as long as diameter of segments. Frontovortex with raised, reticulate sculpture of moderate mesh, almost hexagonal in front of anterior ocellus, becoming more longitudinally elongate between scrobes and eyes and on lower parts of face, interantennal prominence with similar sculpture to frontovortex but distinctly shallower; head with fairly long translucent or dark setae, those on frontovortex about as long as or longer than the diameter of the ocelli. Mandible with two teeth and a truncation or obscurely tridentate; maxillary palpus long, four-segmented, labial palpus three-segmented.

*Thorax*. In side view robust with mesoscutum and scutellum moderately convex, the metapleurum and propodeum together narrowly in contact with hind coxa or slightly separated from it by posterior margin of mesopleurum. In dorsal view with posterior margin of pronotum moderately concave; visible part of mesoscutum nearly twice as broad as long, notaular lines absent, with its posterior margin almost straight but slightly angled outwards in centre; axillae more or less meeting; scutellum about as long as

mesoscutum, clearly convex, about as long as broad, its apex rounded; propodeum medially about one-eighth to one-tenth as long as scutellum. Dorsum of thorax with conspicuous, long, dark setae and shallow irregular, raised, reticulate sculpture, a little shallower than on head except occasionally on scutellum which may be conspicuously deeper; propodeum medially quite smooth or with very few carinae, around spiracles with shallow, raised, irregular sculpture, mesopleurum with very shallow, fine, elongate, reticulate sculpture. Forewing hyaline or almost imperceptibly infusate in basal two-thirds or so, about two and one-half times as long as broad; lineal calva not closed nor interrupted; filum spinosum present; submarginal vein with an indistinct, apical, hyaline break, parastigma not or hardly swollen; costal cell about 13 to 14 times as long as broad, with a single line of setae dorsally in distal half; marginal vein about three to four times as long as broad, about as long as stigmal which in turn is as long as or a little shorter than postmarginal vein. Hindwing about two-thirds as long as forewing, about three and one-half to five times as long as broad, marginal fringe about one-sixth as long as wing width. Mid tibial spur about as long as basal segment of mid tarsus.

*Gaster*. Shorter than thorax; cercal plates in anterior half; hypopygium reaching to about one-half to two-thirds along gaster; paratergites absent, last tergite about one-half to two-thirds as long as mid tibia; ovipositor not exerted to slightly exerted with exerted part about one-quarter length of gaster, ovipositor at least about as long as mid tibia, gonostyli fused to second valvifers and about one-fifth length of ovipositor or longer.

♂. Unknown.

COMMENTS. This genus belongs to the tribe Microteryni, subtribe Microteryna (Encyrtinae) and can be distinguished from all other included genera by the extraordinarily long antenna, relatively high placement of antennal toruli and the long postmarginal vein of the forewing.

*Philosindia longicornis* sp. n.

(Figs 89, 90, 407–410)

♀. Length: 1.14–1.27 mm (holotype, 1.24 mm).

*Colour*. Body generally dusky yellowish orange, gaster a little darker; dorsal margin of scape slightly brownish apically, dorsal surface of flagellar segments and whole of two apical flagellar segments brownish; head with translucent setae, scape, mesoscutum and scutellum with conspicuous dark setae; forewing venation yellow.

*Head*. Malar sulcus present but indistinct, absent towards mouth margin; antennal flagellum a little more than twice as long as maximum head width (2.08–2.23); posterior ocelli a little closer to eye margin than to occipital margin; antennal toruli with lower margins clearly above lower margins of eyes (Fig. 89). Relative measurements (holotype): head width (facial view) 80, head width (side view) 36, head length 70, minimum frontovertex width 33, maximum diameter of posterior ocellus 8, malar space 20, eye length 46, eye width 38, POL 14, OOL 3, scape length 29, scape width 10.5, overall length of flagellum 178, proportions of antenna as in Fig. 407.

*Thorax*. Scutellum with sculpture similar to that of mesoscutum (Figs 409, 410) and head, not distinctly deeper; propodeum medially smooth, about one-tenth as long as scutellum. Relative measurements (holotype): forewing length 240, width 99, venation as in Fig. 90; hindwing length 156, width 44. The relative width of the hindwing can vary; in one paratype it is almost exactly four times as long as broad.

*Gaster*. Ovipositor not exerted. Relative lengths (paratype): last tergite 22.5, ovipositor 39, gonostylus 7.5, [mid tibia 42]. Genitalia as in Fig. 408.

♂. Unknown.

DISTRIBUTION. Hong Kong.

BIOLOGY. Unknown.

MATERIAL EXAMINED

Holotype ♀, **Hong Kong**: N.T., Taipokau, 27.viii.1965, light trap (*Lee Kit Ming & Hui Wai Ming*) (BPBM).

Paratypes. **Hong Kong**: 3 ♀, same data as holotype; 1 ♀, same locality and collectors, 3–4.vii.1964 (BMNH, BPBM).

COMMENTS. A further eight species from India, Philippines, Papua New Guinea and Solomon Is. (BMNH, BPBM, AMNH, USNM). They can be distinguished on several characters but mainly

by the relative lengths of antenna to head width, position of antennal toruli in relation to eyes, relative size of eye, coloration of head, length of last tergite of gaster in relation to mid tibia, and relative length of exerted part of ovipositor.

### **PLAGIOMERUS** Crawford

(Key couplet: 51)

*Plagiomerus* Crawford, 1910: 89. Type-species: *Plagiomerus diaspidis* Crawford, by original designation. *Parahomalopoda* Girault, 1915c: 170. Type-species: *Parahomalopoda peruviansis* Girault, by original designation.

DISTRIBUTION AND SPECIES. Six species, New World, Oriental, Pacific; four from review area: *bangaloriensis* Shafee, Alam & Agarwal (1975: 102) (India), *diaspidis* Crawford (1910: 90) (Hawaiian Is.), *dorceto* Trjapitzin (1969b: 1252) (S. China) and *hospes* Timberlake (1920: 428) (Hawaiian Is.), also undetermined material from Taiwan and Java (BPBM).

REFERENCES. Review of some species: Shafee *et al.* (1975: 101–103); Beardsley (1976: 223).

BIOLOGY. Parasites of Diaspididae (Homoptera).

COMMENTS. The genus is placed in the Habrolepidini, subtribe Habrolepidina (Encyrtinae). It can be separated from related genera by having hyaline wings and a four-segmented funicle with the first joint being shorter than the fourth (see comments under *Coccidencyrtus*).

### **PLATYRHOPUS** Erdős

(Key couplets: 152, 206)

*Platyrrhopus* Erdős, 1955: 40. Type-species: *Platyrrhopus delitescens* Erdős, by original designation.

DISTRIBUTION AND SPECIES. Two species, Palaearctic; neither from review area, but one undescribed species from India (BMNH).

REFERENCE. Herthveztian & Trjapitzin (1974).

BIOLOGY. Parasites of Pseudococcidae (Homoptera).

COMMENTS. Placed in the Anagyrini, subtribe Rhopina (Tetracneminae) and separated from related genera by the characters given in the key.

### **PRALEUROCERUS** Agarwal

(Key couplet: 117. Figs 57, 58, 411)

*Paraleurocerus* Agarwal, 1966: 68. Type-species: *Paraleurocerus viridis* Agarwal, by original designation. [Homonym of *Paraleurocerus* Girault, 1915.]

*Praleurocerus* Agarwal, 1974: 394. [Replacement name for *Paraleurocerus* Agarwal.]

DISTRIBUTION AND SPECIES. One species, India and Sri Lanka only: *viridis* (Agarwal, 1966: 70).

BIOLOGY. Parasites of Pseudococcidae (Homoptera).

COMMENTS. The genus is related to *Dinocarsis* Förster (Tetracneminae, Dinocarsini) and can easily be recognised by the flattened antennal flagellum and the thin flange at the apex of the scutellum (Figs 57, 58).

### **PRIONOMASTIX** Mayr

(Key couplets: 224, 278, 373, 429)

*Prionomastix* Mayr, 1876: 725. Type-species: *Encyrtus morio* Dalman, by monotypy.

*Liocarus* Thomson, 1876: 115, 121. Type-species: *Encyrtus morio* Dalman, by monotypy.

*Chestomorpha* Ashmead, 1900b: 370. Type-species: *Chestomorpha biformis* Ashmead, by original designation.

*Aprionomastix* Girault, 1913a: 68. Type-species: *Aprionomastix fasciatipennis* Girault, by original designation.

DISTRIBUTION AND SPECIES. Seven species, cosmopolitan; none recorded from review area, but several undetermined species from India, Thailand, Vietnam, Malaysia, Sarawak and Philippines (BMNH, BPBM).

REFERENCE. Review of world species: Annecke (1962).

BIOLOGY. Parasites of nymphs of Membracidae (Homoptera).

COMMENTS. Placed in the Prionomasticini, subtribe Prionomasticina (Encyrtinae) (see also comments under *Anagyrodex*).

### **PRIONOMITOIDES** Girault

(Key couplet: 287)

*Prionomitoides* Girault, 1915a: 118. Type-species: *Prionomitoides viridiscutellum* Girault, by original designation.

DISTRIBUTION AND SPECIES. One species, Australia only: *viridiscutellum* Girault (1915a: 118).

BIOLOGY. Unknown.

COMMENTS. We are unable to place the genus confidently according to Trjapitzin's classification of the Encyrtinae. In general appearance it superficially resembles species of *Ooencyrtus* or *Psyllaephagus*, but differs by having a tridentate mandible and the hypopygium clearly reaching the apex of the gaster. It may belong to the tribe Aphycini.

### **PROCHEILONEURUS** Girault

(Key couplets: 94, 137, 384)

*Procheiloneurus* Girault, 1920a: 39. Type-species: *Procheiloneurus triguttatipennis* Girault, by original designation.

*Raphaelana* Girault, 1926b: 66. [Unnecessary replacement name for *Procheilonerus* Girault.] **Syn. n.**

DISTRIBUTION AND SPECIES. Four species, all Australian: *divinus* (Girault, 1926b: 69) (**comb. n.** from *Eusemionella*), *flaviscutellum* Girault (1924a: 5), *perbellus* Girault (1922a: 43) and *triguttatipennis* Girault (1920a: 39), also several other species, near *perbellus*, from Australia (BMNH, UCR, QM, ANIC).

BIOLOGY. Unknown.

COMMENTS. Girault (1926b) unnecessarily proposed the replacement name *Raphaelana* for *Procheiloneurus* Girault which he thought was a junior homonym of *Prochiloneurus* Silvestri, 1915. According to Article 56a of the *International Code of Zoological Nomenclature* a one letter difference is sufficient to prevent homonymy. Therefore the original name must stand.

The species placed within this genus almost certainly represent a polyphyletic group within the Cheiloneurini. Further study will probably indicate that *flaviscutellum* and possibly also *triguttatipennis* should belong in *Cheiloneurus* (and thus *Procheiloneurus* will become a junior synonym of *Cheiloneurus*). However, in this case it will probably become necessary to describe at least one new genus to accommodate *perbellus* and *divina*. For the present we are separating *Procheiloneurus* from *Cheiloneurus* by the characters given in the key, in particular the presence of two areas of dark setae in the basal cell of the forewing (*Cheiloneurus* has only one) and/or the presence of a white, rectangular spot on each side of the pronotum (absent in *Cheiloneurus*).

**PROCHILONEURUS** Silvestri

(Key couplets: 103, 125, 254, 257, 357, 362)

*Prochiloneurus* Silvestri, 1915b: 350. Type-species: *Prochiloneurus pulchellus* Silvestri, by original designation.

*Achrysopophagus* Girault, 1915a: 89. Type-species: *Achrysopophagus oviductus* Girault, by original designation.

*Parachrysopophagus* Agarwal, 1965: 65. Type-species: *Achrysopophagus insolitus* Alam, by original designation. [As subgenus of *Achrysopophagus*.]

*Neoprochiloneurus* Viggiani, 1966: 95. Type-species: *Prochiloneurus bolivari* Mercet, by original designation.

*Prochiloneuroides* Hayat, Alam & Agarwal, 1975: 61. Type-species: *Prochiloneurus comperei* Viggiani, by original designation.

**DISTRIBUTION AND SPECIES.** Thirty-two species, cosmopolitan; 20 from review area: *aegyptiacus* Mercet (1929: 360) (India), *agarwali* Hayat (1981a: 23) (India), *albifuniculus* (Hayat, Alam & Agarwal, 1975: 62) (India), *albioviductus* (Girault, 1925b: 92) (**comb. n.** from *Cheiloneurus*) (Australia), *annulatus* (Ferrière, 1951: 190) (**comb. n.** from *Achrysopophagus*) (Indonesia), *aureipleurum* (Girault, 1932a: 4) (**comb. n.** from *Achrysopophagus*) (Australia), *clavatus* (Girault, 1915a: 89) (Australia), *comperei* Viggiani (1970: 68) (India), *hayati* Shafee, Alam & Agarwal (1975: 53) (India), *indicus* Shafee, Alam & Agarwal (1975: 49) (India), *insolitus* (Alam, 1961: 235) (India), *io* (Girault, 1920c: 187) (Java, Philippines), *javanicus* (Ferrière, 1951: 188) (**comb. n.** from *Achrysopophagus*) (Indonesia), *nigricornis* (Girault, 1920c: 187) (**comb. n.** from *Achrysopophagus*) (Hong Kong, Philippines), *nigriflagellum* (Girault, 1932a: 6) (**comb. n.** from *Achrysopophagus*) (Australia), *oviductus* (Girault, 1915a: 89) (Australia), *rex* (Girault, 1920c: 188) (Java, Philippines, Hawaiian Is.), *taurus* (Girault, 1923a: 49) (**comb. n.** from *Achrysopophagus*) (Australia), *testaceus* (Agarwal, 1965: 68) (India) and *valparianus* Mani & Kaul in Mani *et al.* (1974: 66) (India), also undetermined material, containing several undescribed species, from India, Hong Kong, Papua New Guinea, Australia, New Hebrides and Hawaiian Is. (BMNH, BPBM, CNC, QM, ANIC, HC).

**REFERENCE.** Review of Indian species: Hayat (1981a: 22–26).

**BIOLOGY.** Hyperparasites, via other encyrtids, of various families of Coccoidea (Homoptera), mainly Pseudococcidae and Coccidae, and also Coccinellidae (Coleoptera).

**COMMENTS.** Placed in the tribe Cheiloneurini. It is most closely related to *Cheiloneurus* and *Tineophoctonus* and can be separated from these by having the hypopygium reaching the apex of the gaster, the ovipositor well exerted and the gaster apically rounded (not gradually tapered as in species of the other genera with an exerted ovipositor).

**PROLEUROCEROIDES** Shafee, Alam & Agarwal

(Key couplet: 401. Figs 205, 416)

*Proleuroceroides* Shafee, Alam & Agarwal, 1975: 42. Type-species: *Proleuroceroides pyrillae* Shafee, Alam & Agarwal, by original designation.

**DISTRIBUTION AND SPECIES.** Two species, both known only from India and possibly synonymous: *pyrillae* (Crawford, 1916: 102) (**comb. n.** from *Ooencyrtus*) and *pyrillae* Shafee, Alam & Agarwal (1975: 42), also undetermined material from Sulawesi (BMNH).

**BIOLOGY.** Parasites of eggs of Lophopidae (Homoptera).

**COMMENTS.** The holotype female of *Ooencyrtus pyrillae* Crawford has been examined (USNM). It is very close to, if not the same as, *pyrillae* Shafee, Alam & Agarwal and for this reason we are not proposing a replacement name for the latter.

*Proleuroceroides* is closely related to *Proleurocerus* (Encyrtinae, tribe Proleurocerini) and can be separated by the characters given in the key, notably by the dorsum of the thorax being non-metallic (metallic in *Proleurocerus*) (see also comments under *Leurocerus*).

**PROLEUROCERUS** Ferrière

(Key couplet: 124. Figs 59, 60)

*Proleurocerus* Ferrière, 1935: 402. Type-species: *Proleurocerus fulgoridis* Ferrière, by original designation.

*Arachnosinis* Compere & Zinna, 1955: 112. Type-species: *Arachnosinis zululandiae* Compere & Zinna, by original designation.

**DISTRIBUTION AND SPECIES.** Two species, Afrotropical and Oriental; only one known from review area: *fulgoridis* Ferrière (1935: 403) (India), and one, undescribed species from India (BMNH).

**BIOLOGY.** Parasites of eggs of spiders (Araneida) and Eurybrachidae (Homoptera).

**COMMENTS.** Placed in the tribe Proleurocerini (Encyrtinae) but probably also related to *Leurocerus*, *Pentelicus*, etc. (see comments under *Leurocerus*).

**PROTYNDARICHOIDES** Noyes

(Key couplets: 303, 318, 320, 397, 443. Figs 157, 231–234)

*Protyndarichoides* Noyes, 1980: 224. Type-species: *Protyndarichoides nigriceps* Noyes, by original designation.

**DISTRIBUTION AND SPECIES.** Two described species, Neotropical, European, Afrotropical, Oriental and Australasian; one species from review area: *cinctiventris* (Girault, 1934b: 1) (**comb. n.** from *Echthrogonatopus*) (Australia), also many undescribed species from India, Bangladesh, S. China, Malaysia, Papua New Guinea, New Caledonia and New Zealand (BMNH, BPBM, GC, DSIR).

**BIOLOGY.** Unknown, but has been found in association with scolytid beetles (Coleoptera, Scolytidae) on *Pinus* sp. in France (BMNH).

**COMMENTS.** The material from New Zealand and France is very close to *cinctiventris* and may be this species.

We are unable to place the genus satisfactorily but it may belong in the Cheiloneurini, as suggested previously (Noyes, 1980: 225).

**PSEUDAPHYCUS** Clausen

(Key couplet: 66. Figs 25–27)

*Pseudaphycus* Clausen, 1915: 41. Type-species: *Aphycus angelicus* Howard, by original designation.

*Psilomirinus* Brèthes, 1916: 424. Type-species: *Psilomirinus flavidulus* Brèthes, by original designation.

**DISTRIBUTION AND SPECIES.** Twenty-five species, cosmopolitan; two from review area: *orientalis* Ferrière (1937: 317) (Philippines) and *utilis* Timberlake (1923: 323) (Hawaiian Is.), also further undetermined material from S. China and Cook Is. (BMNH, BPBM, DSIR).

**REFERENCE.** World revision: Gahan (1946).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** *Pseudaphycus utilis* Timberlake is possibly out of place in this genus, having the dorsum of the thorax convex and clothed in conspicuous dark setae. However, at present we do not regard these differences as sufficient to warrant separation into another genus.

Placed in the Aphycini, subtribe Aphycina (Encyrtinae). It is very close to *Acerophagus* and *Pseudectroma* and can be separated from these genera by the characters given in the key.

**PSEUDECTROMA** Girault

(Key couplet: 63. Fig. 28)

*Pseudectroma* Girault, 1915a: 161. Type-species: *Pseudectroma auricorpus* Girault, by original designation.

*Timberlakia* Mercet, 1925a: 9. Type-species: *Acerophagus europaeus* Mercet, by original designation. **Syn. n.**

**DISTRIBUTION AND SPECIES.** Seven described species, Neotropical, European, Afrotropical, Australasian; three species from review area, all Australian: *auricorpus* Girault (1915a: 161), *bryanti* Girault (1922e: 150) and *obscura* Girault (1923c: 143), also further undetermined material from Malaysia and Cook Is. (BMNH, DSIR).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** The clava of *bryanti* may be solid and thus the species could run to either *Acerophagus* or *Indaphycus* in the key. However, we are retaining it in its original combination pending closer examination of the single extant syntype (QM) or more freshly collected material.

The genus belongs to the Aphycini, subtribe Aphycina (Encyrtinae) and is probably closest to *Acerophagus*. Generally it can be distinguished from *Acerophagus* by having a two-segmented clava, whereas *Acerophagus* usually has three segments. The relative width of the frontovertex is probably a more reliable character: in *Acerophagus*, at its narrowest point, it is not wider than the scape length, whereas in *Pseudectroma* it is at least about one-quarter wider than the scape length. Prinsloo (1982) has suggested that these and some related genera may eventually be synonymised and we echo these sentiments. However, he also described two new species from South Africa (under *Timberlakia*), each with a relatively narrow frontovertex. Although both of these species have a two-segmented clava, they may actually belong in *Acerophagus* as defined here.

**PSEUDOCOCCOBIUS** Timberlake

(Key couplets: 153, 167, 360, 390. Fig. 197)

*Pseudococcobius* Timberlake, 1916: 563. Type-species: *Aphycus terryi* Fullaway, by original designation.

*Australrhopoideus* Girault, 1926b: 58. Type-species: *Australrhopoideus melleicorpus* Girault, by monotypy. **Syn. n.**

*Pezaphycus* Nowicki, 1926: 105. Type-species: *Pezaphycus obenbergeri* Nowicki, by original designation. **Syn. n.**

**DISTRIBUTION AND SPECIES.** Four species, Europe, Australia, Pacific; three species from review area: *melleicorpus* (Girault, 1926b: 58) (**comb. n.** from *Australrhopoideus*) (Australia), *quinqueguttatus* (Girault, 1925b: 93) (**comb. n.** from *Aphycus*) (Australia) and *terryi* (Fullaway, 1913: 281) (Hawaiian Is.), also undetermined material from Hong Kong (BPBM).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** *Pseudococcobius* has, in the past, been treated as a synonym of *Aphycus*, although *Pezaphycus* has generally been regarded as a distinct genus (even though their respective type-species are extremely close). We have reinstated it as a good genus since it does appear to differ significantly from species that we regard as belonging to *Aphycus*, notably in the very different head shape and relatively smaller eye with a convex posterior margin (that in *Aphycus* is slightly concave, thus giving the eye a kidney-shaped appearance). There are also differences in structure of the thorax (*Pseudococcobius* has notaular lines always reaching about one-third to one-half way across the mesoscutum and the sculpture of the thoracic dorsum shallow and smooth). In general the antenna is also shorter, with the clava about as long as or longer than the funicle, whereas in *Aphycus* the clava is shorter than the funicle.

*Pseudococcobius* belongs to the Aphycini, subtribe Aphycina (Encyrtinae).

**PSYLLAEPHAGUS** Ashmead

(Key couplets: 142, 181, 204, 218, 252, 289, 301, 345, 433, 448, 456, 462, 495, 525.  
Figs 74, 75, 102, 121, 122)

*Psyllaephagus* Ashmead, 1900b: 382. Type-species: *Encyrtus pachypsyllae* Howard, by original designation.

*Mirocerus* Ashmead, 1904c: 309. Type-species: *Mirocerus peyela* Ashmead, by original designation.

*Calocerineloides* Girault, 1913e: 111. Type-species: *Calocerineloides ramosa* Girault, by original designation. **Syn. n.**

*Epanagyrus* Girault, 1915a: 160. Type-species: *Epanagyrus punctatiscutum* Girault, by original designation. **Syn. n.**

*Anagyropsis* Girault, 1917g: 136. Type-species: *Anagyrus purpureus* Girault, by original designation. **Syn. n.**

*Metaprionomitus* Mercet, 1921: 260. Type-species: *Metaprionomitus intermedius* Mercet, by original designation.

*Shakespearia* Girault, 1928a: 3. Type-species: *Shakespearia flabellata* Girault, by monotypy.

*Psyllencyrtus* Tachikawa, 1955: 63. Type-species: *Psyllencyrtus syntomozae* Tachikawa, by original designation.

*Calluniphilus* Erdős, 1961: 413. Type-species: *Calluniphilus vendicus* Erdős, by monotypy.

*Ooencyrtoides* Hoffer, 1963: 568. Type-species: *Ooencyrtus albopilosus* Hoffer, by original designation.

*Prophyllaephagus* Blanchard in De Santis, 1964: 235. Type-species: *Prophyllaephagus trellesi* Blanchard, by original designation.

*Mercetia* Bakkendorf, 1965: 139. Type-species: *Copidosoma lusitanicum* Mercet, by original designation.

*Kaszabicyrtus* Szelenyi, 1971: 389. Type-species: *Kaszabicyrtus acutigastri* Szelenyi, by original designation.

**DISTRIBUTION AND SPECIES.** About 150 species, cosmopolitan; 107 species from review area, all from Australia except *aligarhensis* which is from India: *\*abyssus* Riek (1962d: 710), *aeneoculex* (Girault, 1929b: 312) (**comb. n.** from *Coccidoxenus*), *albiclava* (Girault, 1915a: 135) (**comb. n.** from *Anagyrus*), *alienus* Riek (1962d: 707), *aligarhensis* Shafee, Alam & Agarwal (1975: 100), *anna* (Girault, 1938: 83) (**comb. n.** from *Anagyropsis*), *aquilus* Riek (1962d: 699), *\*arctatus* Riek (1962d: 713), *arduus* Riek (1962d: 714), *\*argutus* Riek (1962d: 715), *arsanes* (Walker, 1839: 38) (**comb. n.** from *Encyrtus*), *ascitus* Riek (1962d: 704), *\*asser* Riek (1962d: 712), *\*atavus* Riek (1962d: 701), *\*atratus* Riek (1962d: 699), *attenuatus* Riek (1962d: 711), *auricorpus* (Girault, 1915a: 133) (**comb. n.** from *Anagyrus*), *australensis* Girault (1914a: 29) (**comb. n.** from *Anagyrus*), *avus* Riek (1962d: 706), *\*basileus* Riek (1962d: 721), *blandus* Riek (1962d: 721), *\*bliteus* Riek (1962d: 722), *boletus* Riek (1962d: 718), *\*bolus* Riek (1962d: 719), *\*brachiatus* Riek (1962d: 726), *brevicornis* (Girault, 1926c: 129) (**comb. n.** from *Coccidoxenus*), *broccus* Riek (1962d: 716), *bruchus* Riek (1962d: 720), *burnsi* (Girault, 1921a: 2) (**comb. n.** from *Anagyropsis*), *carinatus* Riek (1962d: 735), *cellinini* (Girault, 1915a: 134) (**comb. n.** from *Anagyrus*), *channingi* (Girault, 1913e: 111) (**comb. n.** from *Anagyrus*), *cicada* (Girault, 1915a: 137) (**comb. n.** from *Anagyrus*) (= *Paraenasomyia dubia* Girault, 1923a: 48 **syn. n.**), *cinctorum* (Girault, 1923a: 47) (**comb. n.** from *Paraenasomyia*), *\*clarus* Riek (1962d: 745), *compactus* (Girault, 1923a: 50) (**comb. n.** from *Coccidoxenus*), *concisus* Riek (1962d: 747), *cornuatus* Riek (1962d: 731), *\*cornuphagus* Riek (1962d: 754), *\*dignus* Riek (1962d: 724), *\*discretus* Riek (1962d: 723), *dius* (Girault, 1915a: 137) (**comb. n.** from *Anagyrus*), *dyari* (Girault, 1915a: 137) (**comb. n.** from *Anagyrus*), *\*emarginatus* Riek (1962d: 731), *emersoni* (Girault, 1913e: 113) (**comb. n.** from *Anagyrus*), *\*excisus* Riek (1962d: 737), *\*exiguus* Riek (1962d: 748), *\*facetis* Riek (1962d: 745), *\*facilis* Riek (1962d: 741), *\*faustus* Riek (1962d: 740), *flabellatus* (Girault, 1928a: 3), *\*fundus* Riek (1962d: 742), *\*funiculus* Riek (1962d: 738), *gemitus* Riek (1962d: 755), *grotii* (Girault, 1915a: 135) (**comb. n.** from *Anagyrus*), *guttatipes* (Girault, 1915a: 134) (**comb. n.** from *Anagyrus*), *hardyi* (Girault, 1922f: 1) (**comb. n.** from *Blastothrix*), *hegeli* (Girault, 1915a: 136) (**comb. n.** from *Anagyrus*), *hirtus* Riek (1962d: 744), *howardi* (Girault, 1915a: 134) (**comb. n.** from *Anagyrus*), *irvingi* (Girault, 1922a: 44) (**comb. n.** from *Anagyropsis*), *\*longissimus* Riek (1962d: 733), *longistylus* (Girault, 1929b: 312) (**comb. n.** from *Anagyropsis*), *mazzinini* (Girault, 1915a: 133) (**comb. n.** from *Anagyrus*), *mercurius* (Girault, 1922a: 41)

(**comb. n.** from *Anagyropsis*), *minutellus* (Girault, 1915a: 171) (**comb. n.** from *Tetracnemella*), *\*neoxenus* Riek (1962d: 752), *novipurpureus* (Girault, 1915a: 136) (**comb. n.** from *Anagyropsis*), *pallidipes* (Girault, 1915a: 81) (**comb. n.** from *Aenasiella*), *\*paradoxus* Riek (1962d: 705), *parvus* Riek (1962d: 749), *pegasus* (Girault, 1923a: 48) (**comb. n.** from *Paraenosomyia*), *penni* (Girault, 1913e: 112) (**comb. n.** from *Anagyropsis*), *perplexus* Riek (1962d: 750), *positus* Riek (1962d: 729), *probus* Riek (1962d: 736), *prolatus* Riek (1962d: 734), *punctatiscutum* (Girault, 1915a: 160) (**comb. n.** from *Epanagyropsis*), *purpureus* (Girault, 1915a: 133) (**comb. n.** from *Anagyropsis*), *\*quadriannellus* Riek (1962d: 751), *quadricyclus* Riek (1962d: 751), *ramosus* (Girault, 1913e: 111) (**comb. n.** from *Calocerineloides*), *resolutus* Riek (1962d: 730), *richteri* (Girault, 1923c: 142) (**comb. n.** from *Anagyropsis*), *rubensi* (Girault, 1932a: 1) (**comb. n.** from *Coccidoxenus*), *semicitripes* (Girault, 1926b: 66) (**comb. n.** from *Coccidoxenus*), *similis* Riek (1962d: 738), *smaragdus* (Girault, 1939a: 19) (**comb. n.** from *Anagyropsis*), *spondyliaspidis* (Girault, 1939a: 19) (**comb. n.** from *Anagyropsis*), *spongitus* (Girault, 1915a: 136) (**comb. n.** from *Anagyropsis*), *subgiganteus* (Girault, 1915a: 138), (**comb. n.** from *Anagyropsis*) (= *Psyllaephagus usticius* Riek, 1962d: 695 **syn. n.**), *suburbis* (Girault, 1926b: 67) (**comb. n.** from *Blastothrix*) (= *Psyllaephagus fuscus* Riek, 1962d: 753 **syn. n.**), *terraefilius* (Girault, 1938: 83) (**comb. n.** from *Anagyropsis*), *turbulentus* (Girault, 1920a: 48) (**comb. n.** from *Anagyropsis*), *turneri* (Girault, 1925b: 100) (**comb. n.** from *Blastothrix*), *\*uncinatus* Riek (1962d: 691), *unus* Riek (1962d: 697), *\*utilis* Riek (1962d: 693), *viridiscutellum* (Girault, 1915a: 171) (**comb. n.** from *Tetracnemella*), *westralis* Riek (1962d: 714), *worcesteri* (Girault, 1915a: 139) (**comb. n.** from *Coccidoxenus*), *wundti* (Girault, 1915a: 140) (**comb. n.** from *Coccidoxenus*), *xenus* Riek (1962d: 714), *\*xi* Riek (1962d: 728), *xuthus* (Walker, 1839: 38) (**comb. n.** from *Encyrtus*), *\*ypsilon* Riek (1962d: 732), and *zameis* (Walker, 1839: 39) (**comb. n.** from *Encyrtus*), also much undetermined material from throughout the region (BMNH, BPBM, DSIR, CNC, QM, ANIC, HC).

REFERENCES. Revision of some Australian species: Riek (1962d); key to Palaearctic species: Trjapitzin (1981).

BIOLOGY. Parasites or hyperparasites of nymphs of Psyllidae (Homoptera).

COMMENTS. The single extant syntype female of *Encyrtus arsanes* Walker (BMNH) is here designated LECTOTYPE. The single extant syntype male of *Encyrtus zameis* Walker (BMNH) is here designated LECTOTYPE; it is lacking both pairs of wings. There are two syntypes of *Encyrtus xuthus* Walker in the BMNH; one is in very poor condition and the other does not quite fit Walker's description. They both belong to *Psyllaephagus*, but we are not selecting a lectotype for this species at present.

Riek (1962d) described a number of species from Australia. Unfortunately he failed to label the holotypes (or paratypes) of any of his species even though he cited these in his descriptions. During a visit to ANIC, Canberra, one of us (JSN) selected a primary type from those specimens of the type-series of each species where the data of more than one specimen agreed with the data of the holotype of that species as published by Riek. The names of species for which this has been done are preceded in the above list by an asterisk (\*). These specimens are here designated LECTOTYPE and have been labelled as such.

Several species here placed in other genera may actually belong in *Psyllaephagus*, e.g. *Aenasiella sidneyi* (Girault) and other species placed in that genus and also *Parachalcerinys nonaericornis* Girault. *Psyllaephagus* is so enormously complex in Australia that it is exceedingly difficult to define its limits and there are possibly as many as 1,000 species to be found there.

*Psyllaephagus* belongs to the tribe Trechnitini, subtribe Metaprionomitina and is largely characterised by its brightly metallic green or blue-green colour, punctiform marginal vein of the forewing, the mandible having one or two teeth and a broad truncation, and the hypopygium not extending more than two-thirds along the gaster. However, there are exceptions to each of these characters.

**PSYLLAPHYCUS** Hayat

(Key couplet: 411)

*Psyllaphycus* Hayat, 1972: 207. Type-species: *Psyllaphycus diaphorinae* Hayat, by original designation.DISTRIBUTION AND SPECIES. One species, India only: *diaphorinae* Hayat (1972: 208).

BIOLOGY. Parasites of nymphs of Psyllidae (Homoptera).

COMMENTS. Placed in the Microteriyini, subtribe Syrphophagina (Encyrtinae). It can easily be distinguished from related genera by the bright yellow colour of the body and the mandible having a single tooth and a broad truncation.

**RAFFAELLIA** Girault

(Key couplet: 69)

*Raffaellia* Girault, 1922d: 205. Type-species: *Raffaellia sidneyi* Girault, by monotypy.*Raffaellisca* Ghesquière, 1946: 369. [Unnecessary replacement name for *Raffaellia* Girault.] **Syn. n.**DISTRIBUTION AND SPECIES. One species, Australia only: *sidneyi* (Girault, 1922d: 205).

BIOLOGY. Unknown.

COMMENTS. Very close to *Copidosomopsis* (tribe Copidosomatini, subtribe Copidosomatina) from which it can be separated using the characters given in the key.**RHOPALENCYRTOIDEA** Girault

(Key couplets: 219, 300, 369. Fig. 123)

*Rhopalencyrtoidea* Girault, 1915a: 101. Type-species: *Rhopalencyrtoidea purpureicorpus* Girault, by original designation.DISTRIBUTION AND SPECIES. Three species, all Australian: *austrina* Girault (1929b: 313), *perplexa* (Girault, 1925a: 3) (**comb. n.** from *Nezarhopalus*) and *purpureicorpus* Girault (1915a: 101).

BIOLOGY. Unknown.

COMMENTS. Related to *Coccidoctonus* and *Teleterebratus* (see comments under *Coccidoctonus*). It can be separated from other related genera by having the apex of the hypopygium more or less reaching the apex of the gaster and not beyond, and the forewing having the postmarginal vein longer than the stigmal.**RHOPUS** Förster

(Key couplets: 84, 170, 273, 395, 404. Figs 40, 91, 412–414)

*Rhopus* Förster, 1856: 34. Type-species: *Encyrtus piso* Walker, by original designation.*Xanthoencyrtus* Ashmead, 1902: 302. Type-species: *Xanthoencyrtus nigroclavatus* Ashmead, by monotypy.*Scelioencyrtus* Girault, 1915a: 161. Type-species: *Scelioencyrtus nigriclavus* Girault, by original designation.*Mirastymachus* Girault, 1915a: 166. Type-species: *Mirastymachus europaeus* Girault, by original designation.*Pholidoceras* Mercet, 1918: 237. Type-species: *Pholidoceras brachyptera* Mercet, by monotypy.*Pholidocerodes* Ferrière, 1956: 358. Type-species: *Pholidoceras parvula* Mercet, by original designation.DISTRIBUTION AND SPECIES. Thirty-six species, cosmopolitan; 17 species from review area: *apterus* (Timberlake, 1919b: 201) (Hawaiian Is.), *bridwelli* (Timberlake, 1920: 420) (Hawaiian Is.), *desantisiellus* Ghesquière (1957: 18) (India), *extraclavus* (Girault, 1922e: 149) (**comb. n.** from *Xanthoencyrtus*) (Australia), *fullawayi* (Timberlake, 1919b: 204) (India, Hawaiian Is.), *garibaldia* (Girault, 1933: 4) (**comb. n.** from *Xanthoencyrtus*) (Australia), *gramineus* Hayat

(1970a: 110) (India), *keatsi* (Girault, 1915a: 162) (**comb. n.** from *Scelioencyrtus*) (Australia), *laysanensis* (Timberlake, 1919b: 203) (Hawaiian Is.), *longiclavatus* (Shafee, Alam & Agarwal, 1975: 31) (India), *nigriclavus* (Girault, 1915a: 161) (Australia), *qadrii* (Shafee, Alam & Agarwal, 1975: 30) (India), *sacchari* (Alam, 1961: 239) (India), *sanguineus* (Timberlake, 1920: 416) (Hawaiian Is.), *semiflavus* (Timberlake, 1919b: 204) (Hawaiian Is.), *semiluteus* (Timberlake, 1920: 419) (Hawaiian Is.) and *tricolor* (Girault, 1915a: 162) (**comb. n.** from *Scelioencyrtus*) (Australia), also much undetermined material from throughout the region (BMNH, BPBM, DSIR, QM, ANIC, HC).

REFERENCES. Review of Hawaiian species: Timberlake (1920: 413–421); review of Indian species: Shafee *et al.* (1975: 30–36).

BIOLOGY. Parasites of Pseudococcidae (Homoptera).

COMMENTS. The species of this genus are exceedingly difficult to separate since coloration is not at all reliable. Apart from the relative lengths of the funicle segments, distribution of setae around the linea calva and in the basal cell and relative dimensions of the forewing, we have found that the position and number of the dark erect seta(e) between the posterior ocellus and eye to be of considerable use in separating the species.

Placed in the Anagyrini, subtribe Rhopina (Tetracneminae).

### **RHYTIDOTHORAX** Ashmead

(Key couplets: 176, 216, 236, 306, 316, 331, 399, 450, 467, 530. Figs 99, 139, 415)

*Rhytidothorax* Ashmead, 1900b: 377. Type-species: *Rhytidothorax marlatti* Ashmead, by original designation.

*Anusomyia* Girault, 1915a: 164. Type-species: *Anusomyia auratiscutum* Girault, by original designation.

**Syn. n.**

*Ectromoides* Girault, 1915a: 167. Type-species: *Ectromoides purpureiscutellum* Girault, by monotypy.

**Syn. n.**

*Mesanusomyia* Girault, 1922a: 48. Type-species: *Mesanusomyia fera* Girault, by monotypy. **Syn. n.**

*Swazencyrtus* Prinsloo & Annecke, 1979: 379. Type-species: *Swazencyrtus laticapus* Prinsloo & Annecke, by original designation. **Syn. n.**

DISTRIBUTION AND SPECIES. Eleven species, New World, Afrotropical, Oriental, Australasian; four species from review area, all Australian: *aereiscutellum* (Girault, 1915a: 164) (**comb. n.** from *Anusomyia*), *auratiscutum* (Girault, 1915a: 164) (**comb. n.** from *Anusomyia*), *ferus* (Girault, 1922a: 48) (**comb. n.** from *Mesanusomyia*) and *purpureiscutellum* (Girault, 1915a: 168) (**comb. n.** from *Ectromoides*), also many undescribed species from India, Hong Kong and the Philippines to Australia and New Caledonia (BMNH, BPBM, USNM, CNC, QM, ANIC).

BIOLOGY. Unknown.

COMMENTS. The synonymies proposed above may be difficult to accept, particularly if only the type-species of each of the five genera are examined since they appear to be very morphologically diverse (except perhaps *ferus* and *purpureiscutellum*). However, we have examined probably scores of species from all areas and find that most characters which may be used to separate genera are totally unreliable, e.g. number of teeth on the mandible (the mandibles vary from unidentate to tridentate), shape of the head, sculpture of head and dorsum of thorax, relative length of postmarginal vein of forewing and relative position of the apex of the hypopygium. All the species have these three important characters in common: a similar basic type of wing venation, relatively long propodeum and, in particular, the structure of the ovipositor. The latter is very unusual in the Encyrtinae in that the third valvulae (gonostyli) are completely fused to the second valvifers (Fig. 415) and also no part of the female genitalia is visible externally unless the ovipositor is partially or totally exerted in the egg-laying position. We believe that to keep all of these genera separate at this stage could eventually lead to the total confusion that now seems to exist in the Anagyrini (Tetracneminae) where new genera have

been described for species which do not quite fit the narrowly defined and unnatural limits of already existing genera. Furthermore we do not think that the morphological diversity of *Rhytidothorax*, as defined here, is any greater than in *Copidosoma*.

The genus is close to *Tachinaephagus* and can be separated by the structure of the ovipositor. In *Tachinaephagus* the third valvulae are free and visible externally. The two genera are probably related to *Parastenoterys* (see comments under *Parastenoterys*).

### **RUANDEROMA gen. n.**

(Key couplet: 228, Figs 134–136, 417–421)

Type-species: *Ruanderoma sankarani* sp. n. Gender: feminine.

♀. *Head*. In facial view slightly broader than long, in profile about twice as long as broad and anteriorly more or less gradually and evenly curved. Eye with posterior margin slightly concave, slightly more than one and one-half times as long as broad, more or less naked, with extremely few short hairs and very nearly reaching occipital margin which is sharp. Malar space about one-third length of an eye, malar sulcus present. Frontovortex slightly less than half head width; ocelli in an acute angle, nearly forming a right angle, posterior ocellus about its own diameter from eye margin and about twice this from occipital margin. Antennal scrobes meeting dorsally, very short, reaching about one-fifth way from antennal toruli to anterior ocellus, sharply delimited dorsally by a transverse ridge which nearly runs from eye to eye; antennal torulus separated from mouth margin by slightly less than its own length and from other torulus by about its own length, its mid line about level with ventral margins of eyes; clypeal margin broadly and shallowly excised. Antennal scape much longer than minimum width of frontovortex, cylindrical, about seven or eight times as long as broad, pedicel conical, a little less than one-fifth length of scape, less than half as long as first funicle segment and not quite as long as sixth; funicle segments cylindrical, all longer than broad, the first the longest and gradually shortening distally; clava three-segmented, about one-quarter as long as funicle, with apex rounded but outer suture distinctly converging with inner; longitudinal sensillae on all flagellar segments. Frontovortex with numerous, deep piliferous punctures each separated by a little less than their own diameters and thus giving it a thimble-like appearance, the area between the punctures with shallow, irregular, raised reticulate sculpture, below ridge at top of antennal scrobes more regular and piliferous punctures distinct only on genae but here rather small; setae on frontovortex short, hardly longer than diameter of an ocellus. Mandible with three teeth (Fig. 136), the inner and outer ones rather short, the middle one quite long; maxillary palpus four-segmented, labial palpus three-segmented.

*Thorax*. In side view robust with mesoscutum and scutellum moderately convex, the metapleurum and propodeum together quite broadly in contact with the hind coxa. In dorsal view posterior margin of pronotum moderately concave, visible part of mesoscutum about two-thirds broader than long with notaular lines in anterior half, its posterior margin slightly convex; axillae meeting; scutellum a little shorter than mesoscutum with a distinct subapical carina and with its apex broadly rounded; propodeum medially about half as long as scutellum with a pair of submedian carinae between which is some very shallow irregular rugose sculpture. Mesoscutum, axillae and scutellum with irregular, very shallow, raised reticulate sculpture; dorsum of thorax with numerous inconspicuous dark brown setae. Forewing infusate with base hyaline and several wedge-shaped hyaline marks, a little over three times as long as broad; lineae calva broadly closed by several lines of setae near posterior wing margin; filum spinosum absent; submarginal vein without an apical hyaline break, slightly swollen apically; costal cell more than 30 times as long as broad, with a single line of setae dorsally in its distal one-third or so; marginal vein about 12 times as long as broad, subequal in length to postmarginal which is nearly twice as long as stigmal; submarginal vein with eight or nine very long conspicuous setae on its ventral surface at about two-thirds along its length, each seta at least three times as long as maximum diameter of submarginal vein at this point. Hindwing lightly infusate, almost hyaline, about two-thirds as long as forewing and about six times as long as broad, its marginal fringe about one-quarter to one-third wing width. Mid tibial spur about as long as basal mid tarsal segment.

*Gaster*. Much shorter than thorax, cercal plates about midway along its length; hypopygium reaching apex of gaster, paratergites not distinct in available slide-mounted material; last tergite slightly more than one-third as long as mid tibia, ovipositor a little less than half as long as mid tibia, gonostyli fused to second valvifers, about one-quarter as long as ovipositor.

♂. Only available male is slide-mounted, but apparently differs from female as follows. Eye clearly smaller than in female so that frontovortex distinctly more than half head width and malar space about half as long

as an eye; transverse ridge above antennal scrobes not present, or if so then not distinct; antennal torulus separated from mouth margin by about one and one-half times its own length, from other torulus by its own length, its lowest margin only slightly below lower eye margins; antennal scape slightly broader than minimum width of frontovertex, cylindrical, about five times as long as broad (may be a little less because material is slide-mounted), pedicel about one-quarter length of scape, conical, a little longer than broad but not more than half length of any funicle segment, first funicle segment longest, about six times as long as broad, sixth shortest, about three times as long as broad, clava entire, about as long as first funicle segment, setae on flagellum about as long as diameter of segments, longitudinal sensillae present on all flagellar segments but first; forewing infusate, but less strongly so than in female; aedeagus a little shorter than half length of mid tibia or about one and one-half times as long as mid tibial spur, digiti a little less than one-fifth length of aedeagus, with apical teeth present.

**COMMENTS.** At first glance it is not easy to place this genus in either of the recognised subfamilies of the Encyrtidae since it superficially resembles both *Callipteroma* (Tetracneminae, Anagyrini) and *Ruandella* (Encyrtinae, Microteriyini). The structure of the ovipositor, gaster and wing venation clearly point to it belonging to the Tetracneminae, but it cannot be placed in the tribe Anagyrini because of the presence of notaular lines and clearly tridentate mandibles. The presence of notaular lines, ovipositor structure and apparent absence of paratergites suggest that the genus can be best placed in the Charitopidini although it is somewhat out of place here, having strongly infusate forewings and different venation.

The type-species of the genus is named in honour of Dr T. Sankaran (Commonwealth Institute of Biological Control, Bangalore, India).

### *Ruanderoma sankarani* sp. n.

(Figs 134–136, 417–421)

♀. Length: 1.31–1.57 mm (holotype, 1.57 mm).

**Colour.** Holotype with head dark metallic green, between punctures with weak purple reflections; scape testaceous yellow, pedicel and flagellum dark brown; pronotum, sides and venter of thorax dark orange-brown, mesoscutum, scutellum and axillae dark brown with green, blue and brassy reflections; forewing infusate with pattern as in Fig. 134; legs orange with fore and mid coxae brown, mid tibia a little paler than mid femur, hind femur and tibia which are a little brownish; gaster dark brown with purple and brassy reflections, basal segment orange. There is some variation in colour: the purple colour between the piliferous punctures of the frontovertex can be quite strong and one paratype has the thorax mostly orange (including coxae) with only the mid line of the mesoscutum slightly metallic, the axillae and scutellum with weak purple reflections, the head of this specimen is less strongly metallic green with a hint of orange, the lower parts of the face being distinctly orange.

**Head.** Relative measurements (holotype): head length 36, head width (facial view) 41, head width (side view) 18, minimum frontovertex width 18, malar space 9, eye length 28.5, eye width 17, POL 12, OOL 2, scape length 25, scape width 3, other proportions of antenna as in Fig. 420. Mandible as in Fig. 136.

**Thorax** (Fig. 135). Relative measurements (holotype): forewing length 112, other proportions of forewing as in Fig. 134; hindwing length 82, hindwing width 13.

**Gaster.** Relative lengths (paratype): last tergite 60, ovipositor 76, gonostyli 16, [mid tibia 166]; genitalia as in Fig. 417.

♂. Length: approx. 1.33 mm. Generally differs from female in structure of antenna (Fig. 421), size of eye and genitalia (Figs 418, 419). Relative measurements (paratype): head width 78, minimum frontovertex width 45, scape length 40, aedeagus length 42, mid tibia 103, mid tibial spur 27.

**DISTRIBUTION.** India.

**BIOLOGY.** Unknown.

#### MATERIAL EXAMINED

Holotype ♀, **India:** Karnataka, 25 km W. of Mudigere, 28.x–3.xi.1979 (*J. S. Noyes*) (BMNH).

Paratypes. **India:** 2 ♀, same data as holotype; 1 ♀, Bangalore, iii.1979 (*T. Sankaran*); 1 ♂, Himachal Pradesh, Manali, Bilaspur, 13.x.1979 (*Z. Bouček*) (BMNH).

**RUSKINIANA** Girault

(Key couplet: 97)

*Ruskiniana* Girault, 1923e: 5. Type-species: *Ruskiniana sexguttatipennis* Girault, by monotypy.DISTRIBUTION AND SPECIES. One species, Australia only: *sexguttatipennis* (1923e: 5), also one further species from Australia (BMNH).

BIOLOGY. Unknown.

COMMENTS. Girault described this genus and species from at least two specimens, both of which appear to have been lost. However, three specimens (BMNH) agree totally with Girault's brief description and our interpretation of the genus is based on these.

*Ruskiniana* belongs to the Habrolepidini, subtribe Habrolepidina (Encyrtinae). It is extremely close to *Habrolepis* and virtually can only be separated by the number of scale-like setae at the apex of the scutellum (see key). Very probably they should be synonymised.**SAKENCYRTUS** Hayat

(Key couplets: 76, 385. Figs 33, 195, 196, 422–426)

*Sakencyrtus* Hayat, 1981b: 27. Type-species: *Sakencyrtus mirus* Hayat, by original designation.DISTRIBUTION AND SPECIES. One species, India only: *mirus* Hayat (1981b: 28), also at least two undescribed species from India, Fiji (?) and Australia (BMNH, BPBM).

BIOLOGY. Unknown.

COMMENTS. The genus is close to *Mira* (see comments under *Mira*).**SAPRENCYRTUS** gen. n.

(Key couplets: 234, 462. Figs 141, 221, 222, 427)

Type-species: *Parasyrphophagus casuarinae* Girault. Gender: masculine.

♀. *Head*. In frontal view a little wider than long, in side view about twice as long as broad and more or less gradually and evenly anteriorly rounded. Eye more or less naked but with a few, sparse, inconspicuous setae each no longer than the diameter of a facet; posterior margin of eye more or less straight, eye about one-half longer than broad and more or less reaching occipital margin which is moderately acute. Malar space about two-thirds length of an eye with sulcus absent but marked by a slight change of sculpture. Frontoververtex slightly more than one-third head width; ocelli more or less forming a right angle, the posterior ones nearly touching eye margin but separated from occipital margin by clearly more than their own major diameters. Antennal scrobes shallow, semicircular, meeting dorsally and reaching about one-third way from antennal toruli to anterior ocellus; antennal torulus separated from mouth margin by about its own length and from other torulus by about one-third more than its own length, its dorsal margin a little below ventral level of eyes; clypeus shallowly emarginate. Antennal scape clearly longer than width of frontoververtex, slightly flattened, about five times as long as broad; pedicel conical, a little less than one-third as long as the scape and clearly shorter than the first funicle segment; all funicle segments cylindrical, longer than broad, clearly becoming broader and shorter distally so that the sixth is very nearly quadrate; clava three-segmented, less than one-third length of funicle, with apex more or less rounded and sutures more or less parallel; longitudinal sensillae on all flagellar segments except perhaps the first; longest setae a little shorter than diameter of first funicle segment. Frontoververtex with fine, shallow, raised, reticulate sculpture, more longitudinally elongate between eyes and antennal scrobes, interantennal prominence almost smooth; setae on frontoververtex sparse, each not longer than diameter of anterior ocellus. Mandible with three teeth; maxillary palpus four-segmented, labial palpus three-segmented.

*Thorax*. In side view moderately deep with both mesoscutum and scutellum only a little convex, metapleurum and propodeum together broadly in contact with hind coxa. Pronotum in dorsal view with posterior margin broadly concave; visible part of mesoscutum about one-third broader than long, notaular lines absent, its posterior margin slightly convex but not projecting above axillae which meet medially; scutellum fairly convex, nearly one-third longer than broad, apically quite pointed; propodeum medially only a little less than one-fifth length of scutellum. Mesoscutum with shallow, raised, reticulate sculpture,

scutellum similar but conspicuously shallower and smoother, propodeum medially with similar sculpture to posterior part of scutellum but otherwise fairly smooth; mesopleurum with irregular, shallow, raised, reticulate sculpture in anterior one-third, medially and posteriorly becoming smoother and alutaceous; mesoscutum and scutellum with a few sparse short setae; a few translucent setae on propodeum in front of and to the outside of the spiracle. Forewing infusate, about two and one-half to nearly three times as long as broad; linea calva not interrupted or closed; basal cell moderately hairy but naked proximally; some setae on proximal side of linea calva opposite filum spinosum flattened and scale-like as are some below marginal vein; submarginal vein with parastigma hardly swollen and with a subapical hyaline break; costal cell about 15 times as long as broad, with a few setae dorsally apically; marginal vein about five times as long as broad, about two-thirds longer than stigmal and twice as long as postmarginal. Hindwing hyaline. Mid tibial spur slightly shorter than mid basal tarsal segment.

*Gaster*. About one-quarter longer than thorax (including propodeum), acute apically; hypopygium with apex at about one-third along gaster; last tergite about three-quarters as long as gaster or a little longer than mid tibia; ovipositor slightly exerted, the exerted part about one-tenth length of gaster and sheaths slightly flattened from side to side.

♂. Not available for description.

**COMMENTS.** This genus may possibly belong near *Pseudencyrtus* Ashmead (Microteryni, subtribe Pseudencyrtina). This is suggested by the association with galls, the extremely long gaster and the elongate last gastral tergite. However, the venation is more similar to that of *Syrphophagus*. The genus can be distinguished from these and related genera principally by the strongly infusate forewing and presence of scale-like setae on the proximal side of the linea calva opposite the filum spinosum.

***Saprencyrtus casuarinae* (Girault) comb. n.**

(Figs 141, 221, 222, 427)

*Parasyrphophagus casuarinae* Girault, 1934b: 3. LECTOTYPE ♀, AUSTRALIA (QM), here designated [examined].

♀. Length: 2.85–3.24 mm (lectotype, 2.85 mm).

*Colour*. Head dark metallic greenish blue, mesoscutum metallic green, scutellum metallic blue with some green reflections, mesopleurum, propodeum and gaster purplish, base of gaster more shiny; antenna with scape dark brownish and with a slight metallic green sheen, funicle segments dark brown, apex of fifth, whole of sixth and clava yellowish; legs, including coxae, dark brown, femora and tibiae very slightly brassy or metallic green; forewing infusate as in Fig. 141.

*Head*. Mandible as in Fig. 221. Relative measurements (paralectotype): head length 114, head width (frontal view) 123, head width (side view) 57, minimum frontovertex width 35, POL, 21, OOL 1.5, malar space 49, eye length 71, eye width 51, scape length 72, other proportions of antenna as in Fig. 427. Girault, in his description of the species, states that funicle segments five and six are one-half longer than wide, but this conflicts with the intact specimen described here and the antenna figured. This may result from Girault describing the antenna from a poorly mounted specimen on a slide.

*Thorax*. Relative measurements (paralectotype): forewing length 343, forewing width 129. Base of forewing as in Fig. 222.

*Gaster*. Relative lengths (paralectotype): last tergite 176, [mid tibia 150].

♂. Not available for description.

**DISTRIBUTION.** Australia.

**BIOLOGY.** Parasites or inquilines in galls of *Cylindrococcus amplior* Maskell (Homoptera, Eriococcidae) on *Casuarina stricta*.

**MATERIAL EXAMINED**

Lectotype ♀, **Australia**: South Australia, Adelaide, from gall of *Cylindrococcus amplior* on *Casuarina stricta*, 5.vii.1932 (J. B. Cleland).

**Australia**: 2 ♀ (paralectotypes), South Australia, Adelaide, from gall of *Cylindrococcus amplior* on *Casuarina stricta*, 5.vii.1932 (J. B. Cleland) (one lacking head). (The collector's name conflicts with that given by Girault (1934b: 3), i.e. A. L. Tonnoir.)

COMMENTS. Although the genus and species is described here from two female syntypes, all the syntypes were examined during a visit to the Queensland Museum, Brisbane. In his unpublished manuscript (QM), Girault states that the species was described from one male and four females. A specimen on loan from ANIC, Canberra in QM, Brisbane is here designated lectotype and labelled as such by one of us (JSN).

### **SCHILLERIELLA** Ghesquière

(Key couplet: 76)

*Schilleria* Girault, 1932a: 1. Type-species: *Schilleria pulchra* Girault, by monotypy. [Homonym of *Schilleria* Dahl, 1907.]

*Schilleriella* Ghesquière, 1946: 369. [Replacement name for *Schilleria* Girault.]

DISTRIBUTION AND SPECIES. One species, Australia only: *pulchra* (Girault, 1932a: 1).

BIOLOGY. Unknown.

COMMENTS. *Schilleriella* appears to be related to *Anusia* Förster (tribe Anagyrini, subtribe Anusiina).

### **SPANIOPTERUS** Gahan

(Key couplet: 53. Figs 19, 20)

*Spaniopterus* Gahan, 1927b: 149. Type-species: *Spaniopterus crucifer* Gahan, by original designation.

DISTRIBUTION AND SPECIES. One species, Java and Malaysia only: *crucifer* Gahan (1927b: 150).

BIOLOGY. Parasites of Diaspididae (Homoptera).

COMMENTS. Placed in the tribe Habrolepidini, subtribe Comperiellina (Encyrtinae). It can be distinguished from *Comperiella* by having a four-segmented funicle (*Comperiella* has a six-segmented funicle).

### **STENOTEROPSIS** Girault

(Key couplet: 530)

*Stenoteropsis* Girault, 1915a: 176. Type-species: *Stenoteropsis abjectus* Girault, by original designation.

DISTRIBUTION AND SPECIES. One species, Australia only: *abjectus* Girault (1915a: 176).

BIOLOGY. Unknown.

COMMENTS. Probably related to *Helegonatopus* (Chalcerinyini), from which it can be separated by having the ovipositor slightly exserted and the sheaths a little swollen apically. The two genera may be synonymous, but we are retaining *Stenoteropsis* as valid until fresh material can be compared with the holotype of *abjectus*, which is in poor condition.

### **SYRPHOPHAGUS** Ashmead

(Key couplets: 289, 301, 341, 343, 349, 398, 455, 526. Fig. 186)

*Syrphophagus* Ashmead, 1900b: 397. Type-species: *Encyrtus mesograptae* Ashmead, by original designation.

*Aphidencyrtus* Ashmead, 1900b: 398. Type-species: *Encyrtus aphidiphagus* Ashmead, by original designation. **Syn. n.**

*Echthrobachcha* Perkins, 1906: 253. Type-species: *Echthrobachcha injuriosa* Perkins, by monotypy.

*Nesyrrhophagus* Girault, 1915a: 113. Type-species: *Nesyrrhophagus flavithorax* Girault, by original designation. **Syn. n.**

*Hexanusia* Girault, 1922a: 39. Type-species: *Hexanusia nigricornis* Girault, by monotypy. **Syn. n.**

*Syrphidencyrtus* Blanchard, 1940: 107. Type-species: *Syrphidencyrtus bacchae* Blanchard, by monotypy.

**DISTRIBUTION AND SPECIES.** About 60 species, cosmopolitan; 22 from review area: *aeruginosus* (Dalman, 1820: 170) (India, Hawaiian Is.), *aphidivorus* (Mayr, 1876: 712, 713, 714) (**comb. n.** from *Encyrtus*) (India, Hawaiian Is.), *aquacyaneus* (Girault, 1923a: 50) (**comb. n.** from *Coccidoxenus*) (Australia), *cinctipes* (Girault, 1915a: 110) (**comb. n.** from *Neasteropaeus*) (Australia), *feralis* (Girault, 1929b: 315) (**comb. n.** from *Paraenasomyia*) (Australia), *flavithorax* (Girault, 1915a: 113) (**comb. n.** from *Nesyrphophagus*) (= *Nesyrphophagus unguittatus* Girault, 1915a: 113 **syn. n.**, = *Hexanusia sanguinithorax* Girault, 1927b: 310 **syn. n.**) (Australia), *hakki* Agarwal (1962a: 248) (India), *hofferi* (Hayat, 1973: 35) (**comb. n.** from *Aphidencyrtus*) (India), *indicus* Agarwal (1962a: 246) (India), *injuriousus* (Perkins, 1906: 254) (Australia), *kumaoensis* (Bhatnagar, 1952: 163) (**comb. n.** from *Coccidencyrtus*) (India), *luciani* (Girault, 1922a: 42) (**comb. n.** from *Echthrobaeccha*) (Australia), *merceti* (Masi, 1926: 268) (**comb. n.** from *Microterys*) (Taiwan), *metallicus* (Girault, 1914a: 33) (**comb. n.** from *Aratus*) (Australia), *nigricornis* (Girault, 1922a: 39) (**comb. n.** from *Hexanusia*) (Australia), *obscurus* (Girault, 1923c: 143) (**comb. n.** from *Neasteropaeus*) (Australia), *occidentalis* (Girault, 1917e: 95) (**comb. n.** from *Cerchysius*) (Australia), *parvus* (Girault, 1923a: 47) (**comb. n.** from *Cerchysiopsis*) (Australia), *perdubius* (Girault, 1926c: 132) (**comb. n.** from *Coccidoxenus*), *puparia* (Girault, 1929b: 313) (**comb. n.** from *Epiblatticida*) (Australia), *raffaellini* (Girault, 1922d: 208) (**comb. n.** from *Habrolepoidea*) (Australia) and *varicornis* (Girault, 1923c: 143) (**comb. n.** from *Neasteropaeus*) (Australia), also much undetermined material from throughout the region (BMNH, BPBM, QM, ANIC, USNM, HC, GC).

**BIOLOGY.** Parasites of Aphididae (primary or secondary), Psyllidae (Homoptera) and larvae of Diptera, mostly of Syrphidae predatory on aphids.

**COMMENTS.** The apparent difference in biologies of *Syrphophagus* and *Aphidencyrtus* have been virtually the only reason for regarding both genera as valid, the two being difficult to separate reliably on morphology alone (see Trjapitzin, 1972). One Australian species, *nigricornis* (Girault), would be considered a typical species of *Syrphophagus* by most encyrtid taxonomists since morphologically it is very close to *aeruginosus* (Dalman). However, this species is regularly reared from aphids! With this in mind, the ecological closeness of their hosts and the difficulty in assigning many species to either genus without knowledge of their biologies, we here regard the two as synonymous. Consequently, in addition to the above, we also propose the following new combinations for extra-limital species known to us: *africanus* Gahan (from *Aphidencyrtus*), *cassatus* Annecke (from *Aphidencyrtus*), *inquisitor* Howard (from *Encyrtus*), *mamitus* Walker (from *Encyrtus*), *quercicola* Hoffer (from *Aphidencyrtus*), *similis* Prinsloo (from *Aphidencyrtus*), *tachikawai* Hoffer (from *Aphidencyrtus*) and *taeniatus* Förster (from *Encyrtus*) (all *Syrphophagus*, **comb. n.**).

The holotype of *Microterys merceti* Masi has been examined (IPK). It belongs to *Syrphophagus*.

We have not seen the holotype of *Coccidencyrtus kumaoensis* Bhatnagar, but from the description it must be a *Syrphophagus*.

The genus is placed in the Microterysiini, subtribe Syrphophagina (Encyrtinae) (see comments under *Coccidoctonus*).

### *SZELENYIOLA* Trjapitzin

(Key couplet: 182)

*Szelenyiola* Trjapitzin, 1977: 160. Type-species: *Szelenyiola nearctica* Trjapitzin, by original designation.

**DISTRIBUTION AND SPECIES.** Two described species, New World and Australia: *prospheris* (Ferrière, 1947: 629) (**comb. n.** from *Ooencyrtus*) (Australia).

**BIOLOGY.** Parasites of eggs of Buprestidae and Scolytidae (Coleoptera).

**COMMENTS.** Ferrière (1947) described the clava of *prospheris* as being three-segmented, but examination of slide-mounted material shows that it is entire.

Placed in the tribe Microterytini, subtribe Oobiina (Encyrtinae). Trjapitzin (1977) provides a key to separate the genera of this subtribe.

### **TACHARDIAEPHAGUS** Ashmead

(Key couplets: 308, 392, 409. Figs 184, 185)

*Tachardiaephagus* Ashmead, 1904c: 503. Type-species: *Tachardiaephagus thoracicus* Ashmead, by original designation.

*Lissencyrtus* Cameron, 1913: 99. Type-species: *Lissencyrtus troupi* Cameron, by monotypy.

DISTRIBUTION AND SPECIES. Four species, Afrotropical, Oriental, Australasian; one from review area: *tachardiae* (Howard in Howard & Ashmead, 1896: 637) (India, Sri Lanka, Malaysia, Brunei), also undetermined material from Taiwan and the Philippines (BPBM).

REFERENCE. Prinsloo (1977: 57–69).

BIOLOGY. Parasites of Keriidae (Homoptera).

COMMENTS. Placed in the tribe Microterytini, subtribe Microterytina (Encyrtinae), it can be easily distinguished from other genera found in review area by the structure and shape of the antennal scrobes (Figs 184, 185).

### **TACHINAEPHAGUS** Ashmead

(Key couplets: 236, 306, 316, 365, 399, 450. Figs 143, 144, 236, 428, 430)

*Tachinaephagus* Ashmead, 1904c: 304. Type-species: *Tachinaephagus zealandicus* Ashmead, by original designation.

*Phaenodiscoides* Girault, 1915a: 82. Type-species: *Phaenodiscoides australiensis* Girault, by original designation. **Syn. n.**

*Tachinacphagus* Girault, 1917g: 142. Type-species: *Tachinacphagus australiensis* Girault, by original designation.

*Australencyrtus* Johnson & Tieg, 1921: 118. Type-species *Australencyrtus giraulti* Johnson & Tieg, by original designation.

*Australomalotylus* Risbec, 1956: 170. Type-species: *Australomalotylus rageau* Risbec, by monotypy.

DISTRIBUTION AND SPECIES. Ten species, Afrotropical, east Palaearctic, Oriental and Australasian; seven from review area: *australiensis* (Girault, 1914b: 59) (**comb. n.** from *Phaenodiscus*) (= *Phaenodiscoides australiensis* Girault, 1915a: 82 **syn. n.**) (Australia), *ceylonicus* (Subba Rao, 1972: 191) (Sri Lanka), *javensis* Subba Rao (1978: 71) (Indonesia), *lutheri* (Girault, 1924a: 6) (**comb. n.** from *Phaenodiscoides*) (Australia), *lyperosae* (Ferrière, 1933: 638) (**comb. n.** from *Cerchysius*) (Java), *malayensis* Subba Rao (1978: 72) (Malaysia) and *zealandicus* Ashmead (1904c: 304) (Australia, New Caledonia, New Zealand), also many undescribed species amongst material from India and S. China to Australia and Fiji (BMNH, BPBM, USNM, CNC).

REFERENCE. Revision: Subba Rao (1978).

BIOLOGY. Parasites of larvae of Calliphoridae, Muscidae, Sarcophagidae and Tephritidae (Diptera).

COMMENTS. Girault inadvertently described the same specimen twice as *australiensis*, once under *Phaenodiscus* and once under *Phaenodiscoides*. This is evident from a comparison of the original descriptions. We do not consider *Phaenodiscoides* as a valid genus since *australiensis* is fairly typical of *Tachinaephagus* except that the antennae are a little longer than in most species included in this genus.

We have examined a paratype of *Cerchysius lyperosae* Ferrière (BMNH); it is a species of *Tachinaephagus* with a well-exserted ovipositor.

The genus is related to *Rhytidothorax*, *Parastenoterys* (see comments under these genera) and

*Nerissa* Trjapitzin (1977: 165). The last is very close and may eventually be considered synonymous with *Tachinaephagus*, differing only very slightly in the venation of the forewing.

### **TAFTIA** Ashmead

(Key couplets: 402, 427. Figs 211, 212)

*Taftia* Ashmead, 1904d: 137. Type-species: *Taftia prodeniae* Ashmead, by original designation.

**DISTRIBUTION AND SPECIES.** Two species, Philippines and Java only: *prodeniae* Ashmead (1904d: 137) (Philippines) and *saissetiae* Gahan (1920: 344) (Philippines, Java), also one further species from Malaysia (BPBM).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** Placed in the Chrysoplatycerini, subtribe Taftiina (Tetracneminae) which also includes *Lutherisca* from which it can be separated using the characters given in the key. In all probability Taftiina should be considered synonymous with Chrysoplatycerina.

### **TASSONIA** Girault

(Key couplet: 515. Fig. 252)

*Tassonia* Girault, 1921a: 2. Type-species: *Tassonia glorie* Girault, by monotypy.

**DISTRIBUTION AND SPECIES.** Two species, Oriental and Australasian only: *glorie* Girault (1921a: 2) (= *Neblatticida tassoniaeformis* Girault, 1921a: **syn. n.**) (Australia) and *magniclava* (Hayat & Subba Rao, 1981: 108) (**comb. n.** from *Aphidencyrtus*) (India), also further material containing several undescribed species from India, Hong Kong, Malaysia and Java (BMNH, BPBM, UCR).

**BIOLOGY.** Parasites of Aphididae (Homoptera).

**COMMENTS.** The genus is related to *Syrphophagus* (Microteriyini, subtribe Syrphophagina). It differs in several characters, notably in its generally smaller size, more convex thoracic dorsum, shorter clavate antenna, thicker and subequal marginal, postmarginal and stigmal veins of the forewing and the presence of a naked streak joining the apex of the postmarginal vein to the stigmal (Fig. 252).

### **TELETEREBRATUS** Compere & Zinna

(Key couplets: 199, 369. Figs 431, 432)

*Teleterebratus* Compere & Zinna, 1955: 108. Type-species: *Teleterebratus perversus* Compere & Zinna, by original designation.

**DISTRIBUTION AND SPECIES.** Three species, Oriental and Australasian only: *amplis* (Girault, 1915a: 81) (**comb. n.** from *Aenasiella*) (Australia), *claripennis* (Girault, 1915a: 101) (**comb. n.** from *Rhopalencyrtoidea*) (Australia) and *perversus* Compere & Zinna (1955: 110) (China).

**BIOLOGY.** Parasites of Diaspididae and gall-forming Eriococcidae (Homoptera).

**COMMENTS.** We have not seen the types of *Ageniaspis indicus* Narayanan, but from the very poor description the species possibly belongs in *Teleterebratus*.

The genus appears to be related to *Coccidoctonus* (see comments under *Coccidoctonus*).

### **TETRACNEMOIDEA** Howard

(Key couplet: 53. Figs 21, 22)

*Tetracnemoidea* Howard, 1898b: 232. Type-species: *Tetracnemoidea australiensis* Howard, by monotypy.

*Tetracnemopsis* Ashmead, 1900a: 358. Type-species: *Tetracnemus westwoodii* Cockerell, by original designation.

*Ectromella* Girault, 1915a: 142. Type-species: *Ectromella bicolor* Girault, by original designation. **Syn. n.**  
*Arhopoideus* Girault, 1915a: 174. Type-species: *Arhopoideus brevicornis* Girault, by original designation.  
*Hungariella* Erdős, 1946b: 144. Type-species: *Hungariella piceae* Erdős, by original designation.  
*Antipodencyrtus* Kerrich, 1964b: 505. Type-species: *Antipodencyrtus procellosus* Kerrich, by monotypy.  
**Syn. n.**

**DISTRIBUTION AND SPECIES.** Sixteen species, cosmopolitan; nine from review area: *australiensis* Howard (1898b: 232) (Australia), *bicolor* (Girault, 1915a: 142) (**comb. n.** from *Ectromella*) (= *Arhopoideus tertius* Girault, 1923c: 144 **syn. n.**) (Australia), *brevicornis* (Girault; Tachikawa, 1974: 23) (Australia), *brouni* (Timberlake, 1929: 6) (New Zealand), *indica* (Ayyar, 1932: 287) (India), *ipswichia* (Girault, 1922f: 1) (Australia), *procellosa* (Kerrich, 1964b: 505) (**comb. n.** from *Antipodencyrtus*) (New Zealand) and *secunda* (Girault, 1915a: 175) (Australia), also undetermined material, containing several undescribed species from Papua New Guinea, Tonga, Australia and New Zealand (BMNH, BPBM, DSIR, QM, ANIC).

**REFERENCE.** World review: Trjapitzin & Gordh (1980a).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** Recent collecting in New Zealand has revealed a wealth of material belonging to this genus, including winged forms of *procellosus* or a very similar species. We do not think that the slightly flattened body, or the difference in the number of branches in the antenna of the male, are sufficient reasons for regarding *Antipodencyrtus* as distinct from *Tetracnemoidea*.

Placed in the tribe Tetracneminae, subtribe Arhopoideina (Tetracneminae).

### **TETRACNEMUS** Westwood

(Key couplet: 361)

*Tetracnemus* Westwood, 1837: 258. Type-species: *Tetracnemus diversicornis* Westwood, by monotypy.  
*Tetracladia* Howard, 1892: 367. Type-species: *Tetracladia texana* Howard, by designation of Ashmead (1900: 358).  
*Tetralophidea* Ashmead, 1900b: 348. Type-species: *Tetralophidea bakeri* Ashmead, by original designation.  
*Tetralophiellus* Ashmead, 1900b: 357. Type-species: *Tetralophiellus brevicollis* Ashmead, by original designation.  
*Paracalocerinus* Girault, 1915a: 142. Type-species: *Paracalocerinus australiensis* Girault, by original designation.  
*Masia* Mercet, 1919b: 470. Type-species: *Masia bifasciatella* Mercet, by original designation.  
*Anusiella* Mercet, 1923a: 287. Type-species: *Anusia heydeni* Mayr, by original designation.  
*Placocerus* Erdős, 1946a: 1. Type-species: *Placocerus calocense* Erdős, by monotypy.  
*Comperencyrtus* De Santis, 1964: 106. Type-species: *Comperencyrtus maculipennis* De Santis, by original designation.

**DISTRIBUTION AND SPECIES.** Twenty-one species, cosmopolitan; five from review area: *australiensis* (Girault, 1915a: 142) (Australia), *deccanensis* (Mani & Kaul in Mani *et al.*, 1974: 65) (India), *diversicornis* Westwood (= *Masia pulchripennis* Mercet, 1923a: 289) (India), *heterocornis* Mani & Saraswat in Mani *et al.*, 1974: 75) (India) and *peninsularis* (Mani & Saraswat in Mani *et al.*, 1974: 73), also several undetermined species from India and Australia (BMNH, ANIC, QM, HC).

**BIOLOGY.** Parasites of Pseudococcidae (Homoptera).

**COMMENTS.** Placed in the Tetracnemini, subtribe Tetracnemina (Tetracneminae). The genus can be easily recognised by the well-exserted ovipositor, darkened forewings with a relatively long marginal and short postmarginal and stigmal veins, and the very flattened antennal flagellum.

**THOMSONISCA** Ghesquière

(Key couplet: 191. Figs 114, 429)

*Thomsoniella* Mercet, 1921: 89. Type-species: *Thomsoniella typica* Mercet, by original designation. [Homonym of *Thomsoniella* Signoret, 1880.]

*Thomsonisca* Ghesquière, 1946: 369. [Replacement name for *Thomsoniella* Mercet.]

*Heterencyrtus* Hoffer, 1953: 86. Type-species: *Heterencyrtus sumavicus* Hoffer, by original designation.

*Athesmus* Erdős & Nowicky, 1955: 198. Type-species: *Athesmus luctuosus* Erdős & Nowicky, by original designation.

*Kosztarabia* Erdős, 1957b: 367. Type-species: *Kosztarabia chionaspidis* Erdős, by original designation.

*Euussuria* Chumakova, 1957: 539. Type-species: *Euussuria pallipes* Chumakova, by original designation.

*Pakencyrtus* Ahmad, 1970: 237. Type-species: *Pakencyrtus pakistanensis* Ahmad, by original designation.

**DISTRIBUTION AND SPECIES.** Six species, Palaearctic, Oriental; four from review area: *amathus* (Walker; = *Thomsoniella typica* Mercet, 1921: 90), *indica* Hayat (1970b: 55) (India), *pakistanensis* (Ahmad, 1970: 238) (India, Pakistan) and *sankarani* Subba Rao (1979: 142) (India).

**REFERENCE.** Review: Subba Rao (1979: 139–144).

**BIOLOGY.** Parasites of Diaspididae (Homoptera).

**COMMENTS.** Placed in the tribe Thomsoniscini (Encyrtinae).

**TINEOPHOCTONUS** Ashmead

(Key couplet: 357)

*Tineophoctonus* Ashmead, 1900b: 351. Type-species: *Phaenodiscus armatus* Ashmead, by original designation.

**DISTRIBUTION AND SPECIES.** Three species, New World, Europe, and one undescribed species from Papua New Guinea (BPBM).

**BIOLOGY.** Parasites of gall-inhabiting Tineidae (Lepidoptera), Cynipidae (Hymenoptera) and larvae of Anobiidae and Cerambycidae (Coleoptera).

**COMMENTS.** The species from Papua New Guinea may be incorrectly placed in *Tineophoctonus* since the antennal clava is obliquely truncate and the funicle segments are relatively shorter than in the described species. However, in other characters it seems to comply with those of *Tineophoctonus*.

Placed in the tribe Cheiloneurini (Encyrtinae) and closest to *Cheiloneurus* and *Prochiloneurus*. It can be separated from *Cheiloneurus* by the hypopygium reaching the apex of the gaster and from *Prochiloneurus* by the gaster being apically acute.

**TONGYUS** gen. n.

(Key couplet: 150. Figs 81, 433–439)

Type-species: *Tongyus nesus* sp. n. Gender: masculine.

♀. *Head.* In facial view slightly broader than long, in profile slightly less than twice as long as broad and anteriorly gradually and more or less evenly curved except along length of antennal scrobes where it is almost straight. Eye with posterior margin a little concave, almost straight, about one-third longer than broad, covered with fairly dense long hairs, each hair about one and one-half times to twice as long as diameter of a facet, eye reaching occipital margin which is sharp. Malar space about one-third eye-length, sulcus present. Frontoververtex about one-third head width; ocelli nearly forming an equilateral triangle, the posterior ones a little nearer eye margin than occipital margin and separated from the latter by about their own major diameters. Antennal scrobes moderately deep and meeting dorsally or separated by interantennal prominence which is confluent with frontoververtex, reaching about half way from antennal toruli to anterior ocellus; antennal torulus separated from mouth margin by not more than two-thirds its own length and from other torulus by slightly more than about one-half its own length, its dorsal margin about level

with or a little above the lowest eye margin; clypeal margin shallowly excised. Antennal scape broadened and flattened, a little more than twice as long as broad and clearly longer than minimum width of frontovertex; pedicel conical, slightly longer than any funicle segment except perhaps the first; all funicle segments longer than broad, the sixth only slightly so; clava three-segmented, apically rounded, but with outer suture slightly oblique and converging with inner; flagellar segments slightly flattened, subcylindrical; longitudinal sensillae on all flagellar segments, longest setae clearly shorter than diameter of segments. Frontovertex with very fine, raised, moderately deep, squamiform-reticulate sculpture (Fig. 436), with scattered inconspicuous, translucent setae; eye margins with fairly conspicuous dark setae. Mandible narrow with two acute apical teeth; maxillary palpus four-segmented, labial palpus three-segmented.

*Thorax.* In side view moderately deep, with mesoscutum and scutellum very slightly convex, the metapleurum and propodeum together narrowly in contact with hind coxa. In dorsal view pronotum with hind margin slightly concave; visible part of mesoscutum about twice as broad as long, notaular lines absent posterior margin very clearly convex and produced backwards above axillae; axillae meeting medially; scutellum about as long as mesoscutum, about as broad as long, with apex more or less pointed, sides straight; propodeum medially short, not more than about one-ninth as long as scutellum. Mesoscutum with sculpture similar to but clearly shallower than that on frontovertex; scutellum with same sculpture as frontovertex; propodeum medially with very shallow, irregular, rugose sculpture, outside spiracles much deeper and irregular, mesopleurum with shallow, very fine, raised, regular, reticulate sculpture; setae on dorsum of thorax fairly dense, translucent or brown, quite conspicuous, particularly on scutellum. Forewing at least partially infuscate, about two and one-half times as long as broad; lineae calva closed in posterior one-third; filum spinosum absent; submarginal vein with an apical hyaline break, parastigma not swollen; costal cell about 14 times as long as broad, with a single line of setae dorsally in its apical one-third; marginal vein about three or four times as long as broad, clearly shorter than stigmal which is as long as or a little longer than postmarginal. Hindwing about two-thirds length of forewing, about four times as long as broad, marginal fringe about one-ninth as long as maximum wing width. Mid tibial spur a little shorter than basal mid tarsal segment.

*Gaster.* About as long as thorax; cercal plates in basal one-half; hypopygium reaching apex of gaster; paratergites present; last tergite slightly shorter than mid tibia; ovipositor hardly exerted, about three-quarters as long as mid tibia; gonostyli fused to second valvifers, about one-eighth as long as ovipositor.

♂. Similar to female except body generally darker, antenna and genitalia. Differs as follows. Head proportionately a little broader in frontal view; malar space about one-half length of eye; frontovertex nearly half head width; ocelli nearly forming a right angle, the posterior ones almost equidistant from occipital margin and eye, although a little closer to the former; antennal toruli separated from mouth margin by much more than their own lengths, their lowest margins a little below lowest eye margins; antennal scape shorter than minimum width of frontovertex, stout and slightly broadened and flattened, a little less than three times as long as broad; pedicel conical, subquadrate, not more than half as long as any funicle segment all of which are cylindrical and beset with long setae, the longest at least about four times as long as diameter of segments; clava entire and gradually tapering to a point; longitudinal sensillae on all flagellar segments; scale like sensillae on clava only. Forewing a little broader than in female; lineae calva interrupted and closed. Genitalia with aedeagus slightly less than half as long as mid tibia, digiti (excluding apical spines) about one-fifth as long as aedeagus, each with a pair of long apical spines.

COMMENTS. *Tongyus* belongs in the Anagyrini, subtribe Anagyrina (Tetracneminae) and appears to be most closely related to *Anagyrus*. In the female it can be separated from this and other genera of this group by the combination of the slightly flattened flagellar segments, converging sutures of the clava, sculpture of the head and dorsum of thorax, infuscation of forewings and wing venation.

### *Tongyus nesus* sp. n.

(Figs 81, 433–439)

♀. Length: 1.11–1.75 mm (holotype, 1.60 mm).

*Colour.* Head and thorax brownish yellow, with scutellum, metanotum and propodeum largely dark brown, gaster dark brown; antenna with scape more or less white but margined dark brown ventrally and dorsally (Fig. 433), pedicel and flagellum dark brown; legs brownish yellow but mixed with dark brown, especially apex of mid tibia and all of hind femur and tibia, hind coxa dark brown; forewing infuscate from

base to about one-quarter along wing, an indistinct and incomplete fuscous fascia across wing from marginal and stigmal veins (Fig. 81), remainder of forewing and hindwing hyaline.

*Head.* Antennal scrobes meeting dorsally, interantennal prominence at its upper level clothed in numerous, fairly dense, white setae which continue down either side of prominence to mouth margin. Relative measurements (holotype): head length 35, head width (facial view) 40, head width (side view) 18, minimum frontovertex width 14, malar space 8, eye length 25, eye width 19, POL 5·5, OOL 2·5, scape length 22, scape width 10, proportions of antenna as in Fig. 433.

*Thorax.* Mesoscutum anteriorly with dark setae, posteriorly, and axillae, with translucent or pale setae, usually one or two dark setae scattered amongst pale setae, scutellum with dark setae. Relative measurements (holotype): forewing length 105, width 40, proportions of veins as in Fig. 81; hindwing length 69, width 18. Basal cell of forewing with setae evenly distributed and as dense as in disc distal to venation.

*Gaster.* Relative lengths (paratype): last tergite 47, ovipositor 40, [mid tibia 55]; genitalia as in Fig. 434, hypopygium as in Fig. 435.

♂. Length: 0·96–1·30 mm. Similar to female except following. Body completely dark brown except for interantennal prominence and lower part of face below and to outside of antennal toruli, which are brownish yellow; outer part of scape at base brownish yellow, remainder of antenna dark brown; prepectus whitish; legs dark brown except fore femur and tibia, base of mid tibia and all tarsi which are testaceous yellow, four apical tarsal segments of mid leg mixed dark brown, occasionally mid leg pale as in foreleg but apex of mid tibia always dark brown. Antenna as in Fig. 437, forewing with linea calva interrupted by two lines of setae and closed by a single line on dorsal surface, basal cell with proximal one-third or so naked; genitalia as in Figs 438, 439. Relative measurements (paratype 1): head width 45, minimum frontovertex width 22, scape length 18, forewing length 109, forewing width 48, hindwing length 73, hindwing width 21, aedeagus length 21, mid tibia length 52. Relative measurements (paratype 2): scape length 35·5, maximum scape width 14, POL 17, OOL 8. (Paratype 1 on slide; paratype 2 dry-mounted on card.)

DISTRIBUTION. Cook Is.

BIOLOGY. Unknown.

#### MATERIAL EXAMINED

Holotype ♀, **Cook Is.:** Raratonga, Totokuitu, xi.1978 (*E. W. Valentine*) (DSIR).

Paratypes. **Cook Is.:** 9 ♀, 13 ♂, same data as holotype (DSIR, BMNH, USNM, PPRI, ZI).

COMMENTS. A second species from the Society Is. (BPBM) differs from *nesus* in the arrangement of the scrobes and setae on the interantennal prominence, relative proportions of antennal segments, pattern of infuscation of forewing and venation.

### *TRECHNITES* Thomson

(Key couplet: 72. Fig. 31)

*Trechnites* Thomson, 1876: 118. Type-species: *Trechnites fuscitarsis* Thomson, by monotypy.

*Psylledontus* Crawford, 1910: 88. Type-species: *Psylledontus insidiosus* Crawford, by original designation.

*Metallonella* Girault, 1915a: 77. Type-species: *Metallonella australiensis* Girault, by original designation.

DISTRIBUTION AND SPECIES. Sixteen species, Holarctic, Afrotropical, Oriental, Australasian; five species from review area: *aligarhensis* Hayat, Alam & Agarwal (1975: 90) (India), *australiensis* (Girault, 1915a: 77) (Australia), *manaliensis* Hayat, Alam & Agarwal (1975: 88) (India), *secundus* (Girault, 1915e: 281) (Sri Lanka) and *viridiscutellum* (Girault, 1915a: 132) (**comb. n.** from *Encyrtomyia*), also material from Nepal, Vietnam, Hong Kong, Borneo, New Caledonia and Solomon Is. (BMNH, BPBM).

REFERENCES. Hayat *et al.* (1975: 87–92); Prinsloo (1981: 236).

BIOLOGY. Parasites of nymphs of Psyllidae (Homoptera).

COMMENTS. Placed in the tribe Trechnitini, subtribe Trechnitina (Encyrtinae). It is very close to *Coccidaphycus* from which it can be separated by the characters given in the key.

**TRICHOMASTHUS** Thomson

(Key couplets: 237, 341, 438, 469. Figs 138, 153, 220)

*Trichomasthus* Thomson, 1876: 142. Type-species: *Encyrtus cyaneus* Dalman, by subsequent designation of Gahan & Fagan (1923: 148).

*Coccidoxenus* Crawford, 1913: 248. Type-species: *Coccidoxenus portoricensis* Crawford, by original designation.

DISTRIBUTION AND SPECIES. About 50 species, cosmopolitan; only one species from review area: *mexicanus* (Girault, 1917c: 21) (Hawaiian Is.), also several undetermined species from India, S. China, Hong Kong, Borneo and Australia (BMNH, BPBM, ANIC).

BIOLOGY. Parasites of Coccidae, Diaspididae, Eriococcidae and Pseudococcidae (Homoptera).

COMMENTS. Both *Tetracnemella* and *Stenoteropsis* have been incorrectly synonymised with *Trichomasthus*. *Tetracnemella* is here treated as a synonym of *Ooencyrtus* and *Stenoteropsis* as a valid genus near *Helegonatopus*.

The genus is placed in the Microteriyini, subtribe Microteriyina (Encyrtinae). However, it must be very much closer to *Ooencyrtus* (subtribe Ooencyrtina) than this infers since the two genera occasionally can be difficult to separate.

**TRJAPITZINELLUS** Viggiani

(Key couplets: 326, 508)

*Trjapitzinellus* Viggiani, 1967: 166. Type-species: *Trjapitzinellus semidaliphagus* Viggiani, by original designation.

DISTRIBUTION AND SPECIES. Six species, Holarctic, Oriental; possibly two undetermined species from India (BMNH, HC).

REFERENCE. Key to Palaearctic species: Myartseva (1980).

BIOLOGY. Parasites of immature stages of Coniopterygidae (Neuroptera).

COMMENTS. Placed in the Bothriothoracini, subtribe Coenocercina (Encyrtinae).

**TROPIDOPHRYNE** Compere

(Key couplet: 154)

*Tropidophryne* Compere, 1931: 269. Type-species: *Tropidophryne africana* Compere, by monotypy.

DISTRIBUTION AND SPECIES. Five species, Afrotropical; one undescribed species from New Britain (BPBM).

REFERENCES. Review: Prinsloo & Annecke (1978b: 312–315); Kerrich (1978: 145–150).

BIOLOGY. Parasites of Pseudococcidae (Homoptera).

COMMENTS. We have not seen the female specimen recorded by Baker (1978: 56, Fig. 3), under the name *Zaplatycerus* sp., but from his figure it is almost certainly a species of *Tropidophryne*. The host given by Baker is also probably incorrect (*Doleschalla* sp.; Diptera, Tachinidae).

The genus belongs in the tribe Chrysoplatycerini, subtribe Chrysoplatycerina (Tetracnemiinae). A key to related genera is given by Kerrich (1978: 113–114).

**TYNDARICHUS** Howard

(Key couplets: 184, 415. Fig. 107)

*Tyndarichus* Howard, 1910: 5. Type-species: *Tyndarichus navae* Howard, by original designation.

DISTRIBUTION AND SPECIES. Seven species, Nearctic, Palaearctic, Afrotropical, Oriental,

Australasian; two species from review area: *melanicis* (Dalman, 1820: 345) (India) and *particornis* (Girault, 1924a: 8) (**comb. n.** from *Epiblatticida*) (Australia), also undetermined material from India, Sri Lanka, Nepal, Hong Kong, Java, Sulawesi, New Britain and Australia (BMNH, BPBM).

**BIOLOGY.** Hyperparasites of larvae of Lepidoptera through other Encyrtidae (Hymenoptera).

**COMMENTS.** Placed in the tribe Cheiloneurini, subtribe Epiencyrtina (Encyrtinae) by Trjapitzin & Gordh (1978b). It is very close to *Parechthrodryinus*, from which it can be very difficult to separate if the biology is not known (see characters given in key). This subtribe may be out of place in the Cheiloneurini and it is possible that its included genera are more closely related to those placed in the subtribe Syrphophagina (tribe Microteriyini) since there is some similarity in forewing venation and general morphology, particularly the structure of the thorax.

### **TYNDARICOPSIS** Gordh & Trjapitzin

(Key couplets: 184, 416. Figs 108, 109)

*Tyndaricopsis* Gordh & Trjapitzin, 1981: 48. Type-species: *Tyndarichus clavatus* Eady, by original designation.

**DISTRIBUTION AND SPECIES.** One species, New Guinea only: *clavatus* (Eady, 1960a: 669).

**BIOLOGY.** Hyperparasites of larvae of Pyralidae (Lepidoptera) via other Encyrtidae (Hymenoptera).

**COMMENTS.** Closely related to *Tyndarichus* which has been placed in the Cheiloneurini, subtribe Epiencyrtina (Encyrtinae) by Trjapitzin & Gordh (1978b) (see comments under *Tyndarichus*). It can be separated from *Tyndarichus* and *Parechthrodryinus* by the characters given in the key.

### **WHITTIERIA** Girault

*Whittieria* Girault, 1938: 82. Type-species: *Whittieria pilosigena* Girault, by original designation.

**DISTRIBUTION AND SPECIES.** One species, Australia only: *pilosigena* Girault (1938: 82).

**BIOLOGY.** Unknown.

**COMMENTS.** The genus must be related to *Tachardiaephagus*, *Bennettisca* Noyes, *Aloencyrtus* Prinsloo and *Allencyrtus* Annecke & Mynhardt (Microteriyini, subtribe Microteriyina). Girault mentions that the scrobes are 'deep gouges' (a typical character of this group). Also the dense setation of the forewing, venation and structure of the mandible indicate a relationship with the genera of this group. The true systematic position of the genus will not be known until fresh material, including females, is studied.

### **XENANUSIA** Girault

(Key couplets: 75, 107)

*Xenanusia* Girault, 1917g: 137. Type-species: *Xenanusia pulchripennis* Girault, by original designation.

**DISTRIBUTION AND SPECIES.** Two species, Australia only: *flava* (Girault, 1915a: 153) (**comb. n.** from *Anusia*) and *pulchripennis* Girault (1917g: 138).

**BIOLOGY.** Unknown.

**COMMENTS.** *Xenanusia flava* may be out of place here and may require a new genus to accommodate it. However, we feel that it is correctly placed within the group of genera to which *Xenanusia* belongs.

The type-species of *Xenanusia* is remarkable in that superficially it closely resembles species of *Cerapterocerus* or *Cerapteroceroides*. However, it belongs to the same group of genera as *Cryptanusia*, *Cyrtocoryphes* and *Parectromoidella* (see comments under *Cryptanusia*).

**XENOENCYRTUS** Riek

(Key couplets: 91, 249. Figs 44, 45)

*Xenoencyrtus* Riek, 1962a: 151. Type-species: *Xenoencyrtus niger* Riek, by original designation.

DISTRIBUTION AND SPECIES. Four species, Australia only: *hemipterus* (Girault, 1915a: 172), *hemipterus pentlandensis* (Girault, 1915a: 173), *hemipterus stigmatiferus* (Girault, 1923c: 147), *megymeni* (Dodd, 1917: 354), *megymeni brachypterus* (Dodd, 1917: 355), *niger* Riek (1962a: 152) and *rubricatus* Riek (1962a: 154), also much undetermined material from Australia (BMNH, ANIC, QM).

REFERENCE. Revision: Riek (1962a).

BIOLOGY. Parasites of eggs of Pentatomidae (Heteroptera).

COMMENTS. The types of *hemipterus pentlandensis* and *hemipterus stigmatiferus* cannot be located. (Girault actually described *Ericydnus stigmatifera hemiptera* (1923c: 147), but we feel that somehow the specific and subspecific names must have become juxtaposed either by a *lapsus* on Girault's part or by a type-setting error.)

It is probable that all the species included by Riek in this genus are all forms of the same species.

The genus is close to *Ooencyrtus*, *Ovaloencyrtus* and *Paratetralophidea* (Microteriyini, subtribe Ooencyrtina) and can be separated from these genera by the characters given in the key.

**XENOSTRYXIS** Girault

(Key couplets: 296, 348. Fig. 440)

*Xenostryxis* Girault, 1920a: 41. Type-species: *Xenostryxis margiscutellum* Girault, by monotypy.

DISTRIBUTION AND SPECIES. One species, known only from Australia: *margiscutellum* Girault (1920a: 41), possibly the same species distributed to India and southern Africa (BMNH, PPRI).

BIOLOGY. Unknown.

COMMENTS. *Xenostryxis* is probably related to either *Neococcidencyrtus* (tribe ?Habrolepidini) or *Thomsonisca* (tribe Thomsoniscini) (Encyrtinae).

**YASUMATSUIOLA** Trjapitzin

(Key couplet: 158. Figs 82, 441)

*Yasumatsuiola* Trjapitzin, 1977: 153. Type-species: *Yasumatsuiola orientalis* Trjapitzin, by original designation.

DISTRIBUTION AND SPECIES. One described species, Thailand: *orientalis* Trjapitzin (1977: 155), also further undetermined material, which may include at least one undescribed species, from India, Philippines and Australia (BMNH, BPBM).

BIOLOGY. Unknown.

COMMENTS. Placed in the tribe Dinocarsini (Tetracneminae).

**ZAMENHOFELLA** Girault

(Key couplet: 332)

*Zamenhofella* Girault, 1941:132. Type-species: *Zamenhofella voltai* Girault, by monotypy.DISTRIBUTION AND SPECIES. One species, Australia only: *voltai* Girault (1941: 133).

BIOLOGY. Unknown.

COMMENTS. We are unable to place this genus according to Trjapitzin's (1973b) classification of the Encyrtinae. It bears some resemblance to *Austroencyrtus* (which may be related to the Bothriothoracini, see comments under *Austroencyrtus*).

### **ZAOMMA** Ashmead

(Key couplet: 101. Fig. 49)

*Zaomma* Ashmead, 1900b: 401. Type-species: *Encyrtus argentipes* Howard, by original designation.

*Apterencyrtus* Ashmead, 1905a: 5. Type-species: *Apterencyrtus pulchricornis* Ashmead, by original designation.

*Metallonoidea* Girault, 1915c: 169. Type-species: *Metallonoidea brittanica* Girault, by monotypy.

*Chiloneurinus* Mercet, 1921: 646. Type-species: *Chiloneurus microphagus* Mayr, by original designation.

*Richardsius* Alam, 1957: 439. Type-species: *Apterencyrtus thomsoniscae* Alam, by original designation. [As subgenus of *Apterencyrtus*.]

*Metapterencyrtus* Tachikawa, 1963: 213. Type-species: *Metapterencyrtus eriococci* Tachikawa, by original designation.

DISTRIBUTION AND SPECIES. Thirteen species, cosmopolitan; one species from review area: *lambinus* (Walker, 1838a: 422) (India, Java, Philippines, New Zealand, Hawaiian Is.), also undetermined material from Taiwan (UCR).

REFERENCES. Key to species: Gordh & Trjapitzin (1979a); revision of Afrotropical species: Prinsloo (1979).

BIOLOGY. Hyperparasites of Diaspididae (Homoptera) through other Encyrtidae (Hymenoptera).

COMMENTS. Ashmead (1905a: 5) described *Apterencyrtus pulchricornis* from the Philippines. This species has since been synonymised with *microphagus* Mayr (= *lambinus*) by Gahan (1951: 171), a synonymy which has been followed here. However, in the light of recent work by Gordh & Trjapitzin (1979a) and Prinsloo (1979), a more detailed study may show that the two species are distinct.

### **ZAOMMOENCYRTUS** Girault

(Key couplet: 214, 509. Figs 250, 251, 442–444)

*Zaommoencyrtus* Girault, 1916a: 46. Type-species: *Zaommoencyrtus submicans* Girault, by monotypy.

*Bethylomimus* Trjapitzin, 1962a: 430. Type-species: *Bethylomimus liaoi* Trjapitzin, by original designation.

DISTRIBUTION AND SPECIES. Five species, Holarctic, and also several undescribed species from Papua New Guinea, Caroline Is., Solomon Is. and Fiji (BPBM, USNM).

REFERENCE. Review of Palaearctic species: Khlopunov (1981).

BIOLOGY. Parasites of larvae of Tenebrionidae and eggs and larvae of Cerambycidae (Coleoptera).

COMMENTS. We have compared specimens of the Australasian species with authentic specimens of *submicans*; we regard them as congeneric even though they are relatively larger and have a relatively longer pronotum, although the latter is variable even within the Australasian material.

The genus is placed in the Bothriothoracini, subtribe Coenocercina (Encyrtinae) and is very close to *Cerchysiella* from which it can be separated by the characters given in the key.

### **ZARHOPALOIDES** Girault

(Key couplets: 179, 376, 412, 504)

*Zarhopaloides* Girault, 1915a: 99. Type-species: *Zarhopaloides axillaris* Girault, by original designation.

DISTRIBUTION AND SPECIES. Four species, all Australian: *auricaput* (Girault, 1923c: 145) (**comb. n.** from *Ooencyrtus*), *axillaris* Girault (1915a: 99), *cinctithorax* (Girault, 1939a: 20) (**comb. n.** from *Anagyropsis*) and *speciosus* Girault (1932a: 5), also further undetermined material from Australia (BMNH).

BIOLOGY. One species (*cinctithorax*) has been reared from a species of *Cleptes* (Chrysididae).

COMMENTS. It is possible that a new genus is required for *cinctithorax* since it may be misplaced in this genus. The marginal vein of the forewing is clearly much longer than broad, this being punctiform in the three other species. It may be more closely related to *Coelopencyrtus*.

*Mesanusia speciosa* Girault (1932a: 1) may also belong in this genus (see p. 353).

*Zarhopaloides* appears to be closely related to *Metaphycus* (Aphycini, Paraphycina) and differs from it by the characters given in the key.

### **ZEALANDENCYRTUS** Tachikawa & Valentine

(Key couplet: 58)

*Zealandencyrtus* Tachikawa & Valentine, 1971: 27. Type-species: *Zealandencyrtus yasumatsui* Tachikawa & Valentine, by original designation.

DISTRIBUTION AND SPECIES. One species, New Zealand only: *yasumatsui* Tachikawa & Valentine (1971: 28).

BIOLOGY. Parasites of Pseudococcidae (Homoptera).

COMMENTS. Placed in the tribe Tetracneminae, subtribe Arhopoideina (Tetracneminae). It is close to *Tetracnemoidea* and can be separated from it by the characters given in the key.

### **ZOOENCYRTUS** Girault

(Key couplets: 141, 305)

*Zooencyrtus* Girault, 1915a: 107. Type-species: *Zooencyrtus acutiventris* Girault, by original designation.

DISTRIBUTION AND SPECIES. Two species, Australia only: *acutiventris* Girault (1915a: 107) and *partipilum* Girault (1923a: 49), also one undetermined specimen from Papua New Guinea (BPBM).

BIOLOGY. Unknown.

COMMENTS. We have also examined a group of four species from Papua New Guinea and the Solomon Is. (BPBM) which may belong to this genus, but the antennal toruli are situated much closer to the mouth margin, being separated by much less than their own lengths.

We are unable to satisfactorily place the genus. It appears to be related to *Achalcerinys* (see comments under *Achalcerinys*) and *Mahencyrtus* but also has some similarities with *Helegonatorpus* and related genera (tribe Chalcerinyini). It may also be close to *Mayridia* (see comments under *Mayridia*) but differs from this genus in that the postmarginal vein of the forewing is not shorter than the stigmal and the propodeum is relatively longer.

### **ZOZOROS** gen. n.

(Key couplet: 124. Figs 61, 65, 445–450)

Type-species: *Zozoros sinemarginis* sp. n. Gender: masculine.

♀. *Head*. In frontal view a little broader than long, in profile slightly more than one and one-half times as long as broad and more or less evenly and gradually rounded anteriorly but with protuberances between antennal toruli and eye and interantennal prominence clearly visible. Eye naked, posterior margin more or less straight, about one-quarter to one-third longer than broad and overreaching occipital margin which is sharp or more or less rounded. Malar space about one-half as long as an eye, sulcus present. Frontovortex about one-quarter to two-fifths head width; ocelli forming an angle of about 90°, the posterior ones nearly touching eye margins and separated from occipital margin by about to more than their own diameters.

Antennal scrobes reaching about two-fifths from toruli to anterior ocellus, meeting dorsally, broadly semicircular and delimited dorsally by a moderately sharp carina and laterally, between eyes and antennal toruli, by a slight protuberance, interantennal prominence also clearly protuberant between toruli; antennal torulus separated from mouth margin and from other torulus by about its own length, its upper margin about level with lowest eye margins; clypeus very shallowly and broadly excised, with about six or seven very long downwardly directed bristles. Antennal scape clearly longer than maximum width of frontovertex, broadened and flattened, about twice as long as broad; pedicel conical, about one-quarter length of scape and clearly longer than any of the funicle segments which are cylindrical and slightly broadening distally and all transverse except first; clava about as long as or longer than funicle, strongly obliquely truncate apically, three-segmented, both sutures strongly converging towards base of clava; longitudinal sensillae on all flagellar segments but the first; longest setae about as long as diameter of first funicle segment. Frontovertex with piliferous punctures shallow or well marked and deep, giving the appearance of the surface of a thimble, punctures on lower parts of face shallower and more irregular, areas between punctures smooth or with irregular, shallow sculpture; protuberances between toruli and eyes and between toruli each with irregular, shallow, raised, reticulate sculpture of fairly small mesh, this becoming of larger mesh, more irregular and coriaceous-reticulate on lower parts of face; setae on frontovertex fairly dense and conspicuous. Mandible with three, sharp, apical teeth; maxillary palpus four-segmented, labial palpus three-segmented.

*Thorax.* In side view robust with both mesoscutum and scutellum very slightly convex, almost flat; metapleurum together with propodeum broadly separated from hind coxa by the enlarged mesopleurum which is more or less touching basal segment of gaster. In dorsal view pronotum shallowly concave; mesoscutum with notaular lines absent, about twice as broad as long, its posterior margin convex and projecting above axillae, thus appearing to separate them; axillae meeting; scutellum convex, about as long as broad, with apex almost pointed; propodeum medially nearly one-third length of scutellum. Pronotum and mesoscutum with shallow, raised, squamiform-reticulate sculpture, sculpture of axillae similar but of finer mesh, sculpture of scutellum similar but more longitudinally elongate; piliferous punctures conspicuous, a little shallower and smaller than those on frontovertex; mesopleurum with very irregular, shallow, raised, rugose sculpture; propodeum with strong, raised, irregular sculpture which is deepest medially. Forewing more or less evenly infusate, about two and one-half times as long as broad; linea calva not interrupted or closed; filum spinosum present; basal cell with setae evenly distributed and longer than those distal to linea calva; submarginal vein without an apical hyaline break, parastigma hardly swollen, not much wider than proximal part of vein; costal cell about 13–14 times as long as broad, with one or two lines of setae dorsally along its entire length; marginal vein punctiform or absent; stigmal vein curved, clearly much longer than the short postmarginal; a hyaline and naked line from apex of postmarginal to apex of stigmal veins. Hindwing hyaline, about two-thirds length of forewing, about three and one-half times as long as broad, with marginal fringe about one-sixth as long as maximum wing width. Mid tibial spur about as long as basal mid tarsal segment.

*Gaster.* About as long as thorax; cercal plates in basal one-third; hypopygium more or less reaching apex of gaster; last tergite a little shorter than to about as long as mid tibia, with apex rounded; paratergites absent; ovipositor very slightly exerted and, in type-species, a little longer than mid tibia; gonostyli free, about one-fifth as long as ovipositor.

♂. Unknown.

**COMMENTS.** *Zozoros* appears to be closely related to both *Leurocerus* and *Paksimmondsius* (Microterytini, Ooencyrtina, see comments under *Leurocerus*). It can be separated from both of these in having the hypopygium extending to the apex of the gaster and the relatively long propodeum (less than one-sixth length of scutellum in these two genera). From *Leurocerus* it can also be distinguished by the cylindrical flagellar segments (flattened in *Leurocerus*), and from *Paksimmondsius* by the wing shape, naked eyes and very long, obliquely truncate clava since *Paksimmondsius* has a very broad forewing (less than twice as long as broad), hairy eyes and relatively short, apically rounded clava.

*Zozoros sinemarginis* sp. n.

(Figs 61, 65, 445–450)

♀. Length: 2.16 mm.

*Colour.* Body generally brown excepting following areas: head on frontovertex more or less metallic green with blue and purple reflections, strongly purple on dorsal part of protuberance between torulus and

eye, lower parts of face orange-brown; scape orange-brown, broadly dark brown along ventral margin and a little more narrowly so along dorsal margin, pedicel dark brown, flagellum blackish brown; posterior part of pronotum weakly and mesoscutum more strongly tinged metallic blue, purple and blue-green, axillae very weakly metallic, scutellum strongly metallic greenish blue with some purple, particularly in piliferous punctures; forewing weakly suffused brown, more or less hyaline in proximal half of basal cell and whole of costal cell, a hyaline streak connecting apex of postmarginal to stigmal vein, a small area opposite and apex more or less hyaline; gaster more or less dark reddish brown with brassy and some purple reflections.

*Head.* Frontoververtex with deep conspicuous piliferous punctures, these touching or almost touching one another, particularly near ocelli (Fig. 445), areas between punctures quite smooth, lower parts of face with irregular, raised, reticulate sculpture, this of smaller mesh on protuberances between antennal toruli and eyes; occipital margin more or less rounded. Relative measurements (holotype): head length 99, head width (facial view) 111, head width (side view) 63, minimum frontoververtex width 35, diameter of posterior ocellus 7, length of antennal torulus 17, distance of torulus from mouth margin 15, malar space 30, eye length 69, eye width 52, POL 22, OOL 1, scape length 71, scape width 35, other proportions of antenna as in Fig. 65.

*Thorax.* Sculpture of mesoscutum, scutellum and propodeum as in Figs 447, 448, 450. Relative measurements (holotype): forewing length 281, width 114; hindwing length 193, width 55; base of forewing as in Fig. 61.

*Gaster.* Relative length (paratype): ovipositor 73, last tergite 65, [mid tibia 69]; genitalia as in Fig. 446, hypopygium as in Fig. 449.

♂. Unknown.

DISTRIBUTION. Hong Kong.

BIOLOGY. Unknown.

#### MATERIAL EXAMINED

Holotype ♀, **Hong Kong**: N.T., Sai Kung Station, 30.i.1965 (W. J. Voss & Hui Wai Ming) (BPBM).

Paratype. **Hong Kong**: 1 ♀, same data as holotype, 30.xii.1964 (BMNH).

COMMENTS. We have examined three specimens from the Philippines, Brunei and New Britain which appear to belong to two further species. These differ from *sinemarginis* in having a sharp occipital margin, forewing with a punctiform marginal vein and head and dorsum of thorax with shallower piliferous punctures. They also differ from each other and *sinemarginis* in the relative width of an eye, frontoververtex, size of ocelli and toruli, antennal proportions and relative length of last tergite of the gaster.

### Incertae sedis

*Ageniaspis indicus* Narayanan (1961: 23) (India). We have not seen the types of this species and are unable to place it satisfactorily from the very poor description. It cannot belong in *Ageniaspis*, but it may possibly belong to the genus *Teleterebratus*.

*Anagyrus saintpierrei* Girault (1913e: 112) (Australia). The species superficially resembles some species of *Psyllaephagus*, but the mandible has only two sharp teeth. Girault (1915a: 147) placed the species in *Fulgoridicida* but this must be incorrect. It is possibly an aberrant species of *Coelopenyrtus*.

*Anagyrus semifulvus* Girault (1915a: 136) (Australia). We are unable to place the species, although it may belong to *Rhopalencyrtoidea*.

*Cerchysius australiensis* Ashmead (1900a: 342) (Australia). We have examined the holotype of this species (USNM). It is close to *Psyllaephagus*, but we are unable to place it in this genus because of the following combination of characters: (1) hypopygium more or less reaching the apex of the gaster, (2) first funicle segment clearly longer than pedicel and (3) forewing with marginal vein about three to four times as long as broad (see couplet 232).

*Encyrtus adustipennis* Motschulsky (1863: 55) (Sri Lanka). We have not seen the holotype of this species; according to Trjapitzin (Bouček, pers. comm.) it is badly damaged and unplaceable to genus.

*Encyrtus solidus* Howard (in Howard & Ashmead, 1896: 638) (Sri Lanka). The holotype male (USNM) has been examined. We are unable to place the species. The antenna is very characteristic, having a seven-segmented flagellum, but with each segment having the appearance of those found in *Coccophagus*. The longitudinal sensillae are very prominent (as in some male *Cerchysiella*) and the funicle segments gradually shorten towards the apex of the antenna so that the sixth is less than half as long as the first.

*Encyrtus zebinia* Walker (1839: 36) (Australia). No types located. We are unable to place the species from Walker's brief description.

*Mesanusia speciosa* Girault (1932a: 1). We cannot place this species. It may be related to *Metaphycus*, *Zarhopaloides* or perhaps *Aphycopsis* (see key couplet 413).

## Systematic relationships of Indo-Pacific encyrtid genera

The following summary of the possible systematic relationships between the Indo-Pacific genera is based on the system of classification as proposed by Trjapitzin (1973a; 1973b). It must be stated here that we do not fully agree with the tribal and subtribal classification proposed by him, but we do agree with the basic division of the Encyrtidae into two subfamilies.

### ENCYRTIDAE

#### Encyrtinae

##### Microteriyini

*Aphycomorpha*, *Aphycopsis*,  
? *Australanusia*, ? *Ectopiognatha*,  
? *Exoristobia*, *Gahaniella*, ? *Mozartella*,  
? *Parablatticida*, ? *Phauloencyrtus*

##### Microteriyina

*Bothriophryne*, *Doddanusia*, *Erencyrtus*,  
? *Hesperencyrtus*, *Microterys*,  
*Neastymachus*, *Paraphaenodiscus*,  
*Philosindia*, *Tachardiaephagus*,  
*Trichomasthus*, *Whittieria*

##### Pseudencyrtina

? *Cerchysius*, ? *Papuna*, *Paraenasomyia*,  
*Saprencyrtus*

##### Syrphophagina

? *Austroencyrtoidea*, ? *Bachiana*,  
*Coccidoctonus*, ? *Conchynilla*,  
*Diaphorencyrtus*, *Epiblatticida*,  
? *Nezarhopalus*, *Psyllaphycus*,  
*Rhopalencyrtoidea*, *Syrphophagus*,  
*Tassonia*, *Teleterebratus*

##### Oobiina

*Avetianella*, *Szelenyiola*

##### Ooencyrtina

*Agarwalencyrtus*, *Fulgoridicida*, *Hengata*,  
*Isodromoides*, ? *Leefmansia*, ? *Leurocerus*,  
*Mesanusia*, *Ooencyrtus*, *Ovaloencyrtus*,  
*Paratetralophidea*, *Xenoencyrtus*

##### Amirini

*Amira*

##### Comperiini

*Comperia*

##### Cheiloneurini

*Achalcerinys*, *Austromira*, *Baeoanusia*,  
*Cheiloneurella*, *Cheiloneuromyia*,

*Cheiloneurus*, *Diversinervus*,  
*Echthrobacella*, *Echthrogonatopus*,  
*Ectroma*, ? *Exoristobia*, ? *Hypergonatopus*,  
*Mahencyrtus*, ? *Meniscocephalus*,  
*Mesocalocerinus*, *Neabrolepoideus*,  
*Neblatticida*, *Parechthrodryinus*,  
? *Pasulinia*, *Procheiloneurus*,  
*Prochiloneurus*, ? *Protyndarichoides*,  
*Tineophoctonus*, *Tyndaricopsis*,  
*Tyndarichus*, *Zaomma*, ? *Zooencyrtus*

##### Cerapterocerini

*Anicetus*, *Cerapteroceroides*,  
*Cerapterocerus*, *Eusemion*,  
*Lakshaphagus*, *Paraceraptocherus*

##### Thomsoniscini

*Thomsonisca*, ? *Xenostrixis*

##### Habrolepidini

? *Pasulinia*, ? *Xenostrixis*

##### Habrolepidina

*Adelencyrtoides*, *Adelencyrtus*,  
*Caenohomalopoda*, *Coccidencyrtus*,  
*Epitetracnemus*, *Epitetralophidea*,  
*Habrolepis*, *Homalopoda*, *Plagiomerus*,  
*Ruskiniana*

##### Comperiellina

*Comperiella*, ? *Neocladella*, *Paraschedius*,  
*Spaniopterus*

##### Trechnitini

*Mesorhopella*, *Pararhopella*

##### Trechnitina

*Coccidaphycus*, *Trechnites*

##### Metaprimonitina

*Aenasiella*, ? *Cerchysius*, *Neanagyrs*,  
? *Parachalcerinys*, *Psyllaephagus*

##### Aphycini

*Australia*, ? *Prionomitoides*

Aphycina  
*Acerophagus*, *Aphycus*, *Epistenoterys*,  
*Indaphycus*, *Pseudaphycus*,  
*Pseudectroma*, *Pseudococcobius*

Paraphycina  
*Aenasioidea*, *Aenasomyiella*,  
*Australaphycus*, *Beethovena*, *Metaphycus*,  
*Nassauia*, *Paraphycus*, *Zarhopaloides*

Blastothrichina  
*Blastothrix*

Homalotylini  
Homalotylini  
*Copidosomyia*, *Homalotylus*, *Isodromus*

Bothriothoracini  
*?Aseirba*, *?Austroencyrtus*, *Borrowella*,  
*?Brachyplatycerus*, *?Encyrtoidea*,  
*?Ethoris*, *?Hemileucocerus*, *?Hexencyrtus*,  
*?Leurocerus*, *?Paksimmondsius*,  
*?Parencyrtomyia*, *?Pentelicus*

Bothriothoracina  
*Bothriothorax*, *Heterococcidoxenus*

Coenocercina  
*Cerchysiella*, *Gentakola*, *?Parastenoterys*,  
*Pentacladocerus*, *?Rhytidothorax*,  
*?Trjapitzinellus*, *Zaommoencyrtus*

Aminellina  
*Amicencyrtus*, *Cowperia*

Proleurocerini  
*Proleuroceroides*, *Proleurocerus*

Rhinoencyrtini  
*Paratetracnemoidea*

Copidosomatini  
Ageniaspidina  
*Ageniaspis*, *?Coagerus*, *?Ethoris*,  
*Holcothorax*

Copidosomatina  
*Copidosoma*, *Copidosomopsis*,  
*Paralitomastix*, *Raffaellia*

Coelopencyrtina  
*Coelopencyrtus*, *?Nathismusia*

Cercobelini  
*Cercobelus*

Astymachini  
*Astymachus*

Ixodiphagini  
*Hunterellus*

Aethognathini  
*Olypusa*

Prionomasticini  
*?Meniscocephalus*

Prionomasticina  
*Eucomomorphella*, *Prionomastix*

Encyrtini  
*Encyrtus*, *?Muluencyrtus*

Neocladini  
*Carabunia*, *Neocladia*, *Paracladella*,  
*Paraleptomastix*

Eugahaniini  
*Anagyrodes*, *Eugahania*

Psyllechthrinini  
*Arrhenophagoidea*

Arrhenophagini  
*Arrhenophagus*

Anthemini  
*Anthemus*

Incertae sedis  
*Haligra*, *Lamennasia*, *Mesastymachus*,  
*Negeniaspidius*, *Ovidoencyrtus*

### Tetracneminae

Charitopidini  
*Adekitopus*, *Charitopus*, *Clausenia*,  
*Eotopus*, *Manicnemus*, *Neocharitopus*,  
*Paraclausenia*, *Parectromoides*

Miraini  
*Mira*, *Sakencyrtus*

Ericydnini  
*Ericydnus*

Dinocarsiini  
*?Callipteroma*, *?Cryptanusia*,  
*?Cyrtocoryphes*, *?Epanusia*,  
*Holanusomyia*, *?Parectromoidella*,  
*Praleurocerus*, *?Xenanusia*,  
*Yasumatsuiola*

Anagyrini  
Rhopiina  
*Asitus*, *Hamusencyrtus*, *Neorhopus*,  
*Platyrhopus*, *Rhopus*

Anagyrina (= Leptomastideina **syn. n.**)  
*Alamella*, *Anagyrietta*, *Anagyrus*,  
*Anomalencyrtus*, *Apoleptomastix*,  
*Bacalusa*, *Cremesina*, *Doliphoceras*,  
*Epidinocarsis*, *Gyranusoidea*,  
*Leptomastidea*, *Leptomastix*,  
*Mashhoodia*, *Paranathrix*, *Tongyus*

Anusiina  
*?Monstranusia*, *?Schilleriella*

Anomalicorniini  
*Anomalicornia*

Pauridiini  
*Coccidoxenoides*, *Marxella*

Tetracnemini  
Tetracnemina  
*Tetracnemus*, *?Monstranusia*

Arhopoideina  
*Anarhopus*, *Tetracnemoidea*,  
*Zealandencyrtus*

**Aenasiini (= Neodiscodini syn. n.)**

*Aenasius*, *Ameniscocephalus*, *Blepyrus*,  
*Cladiscodes*, *Euryrhopalus*,  
*Metaphaenodiscus*, *Neodiscodes*

**Acroaspidini**

*Coelaspidia*

**Chrysolatycerini****Chrysoplatycerina**

*Ceraptrocerella*, *Chrysoplatycerus*,  
*Neoplatycerus*, *Tropidophryne*

**Taftiina**

*Ananusia*, *Hambletonia*, *Lutherisca*, *Taftia*

**Incertae sedis**

*Neodusmetia*, *Ruanderoma*

**Host index**

Unless otherwise stated, hosts are usually in the larval or nymphal stage. A comprehensive world coverage of the hosts of the Encyrtidae is given by Tachikawa (1981).

**ARACHNIDA****ARANEIDA**

Eggs: *Amira*, *Ooencyrtus*, *Proleurocerus*

**ACARINA****Ixodidae**

*Hunterellus*

**INSECTA****NEUROPTERA****Chrysopidae**

*Copidosomyia*, *Isodromus*

**Coniopterygidae**

*Trjapitzinellus*

**Hemerobiidae**

*Isodromus*

**DICTYOPTERA****BLATTODEA**

Eggs: *Comperia*, *Mesanusia*

**ORTHOPTERA****Tettigoniidae**

Eggs: *Leefmansia*, *Mesanusia*

**HETEROPTERA**

Eggs: *Ooencyrtus*

**Coreidae**

Eggs: *Paratetralophidea*

**Pentatomidae**

Eggs: *Xenoencyrtus*

**Reduviidae**

Eggs: *Ovidoencyrtus*

**HOMOPTERA**

*Cheiloneurus* (hyperparasitic)

**AUCHENORRHYNCHA**

*Echthrogonatopus* (hyperparasitic),

*Helegonatopus* (hyperparasitic),

*Hypergonatopus* (hyperparasitic),

*Ooencyrtus* (hyperparasitic)

**Cercopidae**

*Carabunia*

**Cicadellidae**

*Anagyrodes*, *Eugahania*, *Meniscocephalus*,

*Neocladia*

**Eurybrachidae**

Eggs: *Ectopiognatha*, *Fulgoridicida*,  
*Proleurocerus*

**Flatidae**

Eggs: *Ectopiognatha*

**Fulgoridae**

*Isodromoides* (hyperparasitic)

**Lophopidae**

Eggs: *Proleuroceroides*

**Membracidae**

*Prionomastix*

**STERNORRHYNCHA****Aphididae**

*Cerapteroceroides* (hyperparasitic),  
*Ooencyrtus*, *Syrphophagus* (also  
hyperparasitic), *Tassonia*

**Psyllidae**

?*Aenasomyiella*, *Cerapteroceroides*  
(hyperparasitic), *Cercobelus*, *Coccidoctonus*  
(hyperparasitic), *Diaphorencyrtus*,  
*Epiblatticida* (hyperparasitic), *Neanagyrus*,  
*Psyllaephagus* (also hyperparasitic),  
*Psyllaphycus*, *Syrphophagus*, *Trechnites*

**COCOIDEA**

*Nassauia*, *Prochiloneurus* Silvestri  
(hyperparasitic)

**Aclerididae**

*Astymachus*, *Mayridia*, *Neastymachus*

**Asterolecaniidae**

*Habrolepis*, *Lakshaphagus*, *Metaphycus*,  
*Neastymachus*

**Coccidae**

*Aenasioidea*, *Anicetus*, *Blastothrix*,  
*Bothriophryne*, *Cerapteroceroides*  
(hyperparasitic), *Cerapterocer*  
(hyperparasitic), *Cheiloneuromyia*,  
*Coccidaphycus*, *Coccidoctonus*  
(hyperparasitic), *Diversinervus*, *Encyrtus*,  
*Eusemion*, *Gahaniella* (also hyperparasitic),  
*Mashhoodiella*, *Metaphycus*, *Microterys*,  
*Paraceraptrocerus*, *Paraphaenodiscus*,  
*Parechthrodryinus*, *Trichomasithus*

## Diaspididae

*Adelencyrtoides*, *Adelencyrtus*, *Anthemus*,  
*Aphycomorpha*, *Arrhenophagoidea*,  
*Arrhenophagus*, *Bachiana*,  
*Caenohomalopoda*, *Cerapteroceroides*  
(hyperparasitic), *Coccidencyrtus*,  
*Comperiella*, *Epitetracnemus*, *Habrolepis*,  
*Homalopoda*, *Metaphycus*, *Paraschedius*,  
*Plagiomerus*, *Spaniopterus*, *Teleterebratus*,  
*Thomsonisca*, *Trichomasthus*, *Zaomma*  
(hyperparasitic)

## Eriococcidae

*Aenasiella*, *Aphycomorpha*, *Metaphycus*,  
*Saprenicyrtus*, *Teleterebratus*,  
*Trichomasthus*

## Kermesidae

*Aenasioidea*, *?Blastothrix*, *Microterys*,  
*Paksimmondsius*

## Kerriidae

*Erencyrtus*, *Lakshaphagus*, *Metaphycus*,  
*Parechthrodryinus*, *Tachardiaephagus*

## Lecanodiaspididae

*Microterys*

## Margarodidae

*Eotopus*

## Pseudococcidae

*Acerophagus*, *Aenasius*, *?Agarwalencyrtus*,  
*Alamella*, *Anagyrietta*, *Anagyrus*,  
*?Ananusia*, *Anarhopus*, *Anomalicornia*,  
*Aphycus*, *Apoleptomastix*, *Asitus*,  
*?Astymachus*, *Blepyrus*, *Callipteroma*,  
*Ceraptrocerella*, *Cerapteroceroides*  
(hyperparasitic), *Chrysoplatycerus*,  
*Cladiscodes*, *Clausenia*, *Coccidoctonus*  
(hyperparasitic), *Coccidoxenoides*,  
*Coelaspidia*, *Cryptanusia*, *Doliphoceras*,  
*Epidinocarsis*, *Epistenoterys*, *Ericydnus*,  
*Euryrhopalus*, *Gahaniella* (hyperparasitic),  
*Gyranusoidea*, *Hambletonia*,  
*Hamusencyrtus*, *Leptomastidea*,  
*Leptomastix*, *Mashhoodia*, *Mayridia*,  
*Metaphaenodiscus*, *Neocharitopus*,  
*Neodiscodes*, *Neodusmetia*, *Neoplatycerus*,  
*Neorhopus*, *Paranathrix*, *Platyrhopus*,  
*Praeurocerus*, *Pseudaphycus*,  
*Pseudectroma*, *Pseudococcobius*, *Rhopus*,  
*Taftia*, *Tetracnemoidea*, *Tetracnemus*,  
*Trichomasthus*, *Tropidophryne*,  
*Zealandencyrtus*

## LEPIDOPTERA

Eggs: *Ooencyrtus*

Larvae: *Copidosoma*, *Ooencyrtus*  
(hyperparasitic), *Tyndarichus*  
(hyperparasitic)

## Amathusiidae

Eggs: *Leurocerus*

## Epipyropidae

*Isodromoides*

## Gelechiidae

*Paralitomastix*

## Gracillariidae

*Holcothorax*

## Lycaenidae

Pupae: *Hesperencyrtus*

## Lyonetiidae

*Parablastothrix*

## Nepticulidae

*Holcothorax*, *Parablastothrix*

## Pyrilidae

*Copidosomopsis*, *Paralitomastix*, *Tyndaricopsis*  
(hyperparasitic)

## Satyridae

Eggs: *Leurocerus*

## Tineidae

*Tineophoctonus*

## Tortricidae

*Copidosomopsis*

## Yponomeutidae

*Ageniaspis*

## COLEOPTERA

## Anobiidae

*Tineophoctonus*

## Buprestidae

Eggs: *Szelenyiola*

## Cerambycidae

*Austroencyrtus*, *Tineophoctonus*,  
*Zaommoencyrtus*; Eggs: *?Aenasiella*,  
*Avetianella*, *Zaommoencyrtus*

## Chrysomelidae

Eggs: see *Baeoanusia*

## Coccinellidae

*Anagyrus*, *Cowperia*, *Homalotylus*,  
*Prochiloneurus* *Silvestri* (hyperparasitic)

## Erotylidae

*Cerchysiella*

## Lathridiidae

*?Lamennaisia*

## Nitidulidae

*Cerchysiella*

## Scolytidae

*Heterococcidoxenus*, *?Protyndarichoides*;  
Eggs: *Avetianella*, *Szelenyiola*

## Silvanidae

*Cerchysiella*

## Tenebrionidae

*Zaommoencyrtus*

## DIPTERA

## Calliphoridae

Puparia: *Tachinaephagus*

## Cecidomyiidae

*Mayridia*, *Paraenasomyia*

## Chamaemyiidae

*Cerchysius*

## Drosophilidae

*Cheiloneurus*

## Muscidae

Puparia: *Tachinaephagus*

## Phoridae

Puparia: *Exoristobia*

## Pipunculidae

? *Agarwalencyrtus*

## Sarcophagidae

Puparia: *Tachinaephagus*

## Syrphidae

Puparia: *Bothriothorax*, *Exoristobia*,*Ooencyrtus*, *Syrphophagus*

## Tachinidae

Puparia: *Exoristobia*

## Tephritidae

Puparia: *Tachinaephagus*

## Trypetidae

*Cerchysiella*

## HYMENOPTERA

## Aphelinidae

*Cerapteroceroides*, *Cheiloneurus*,*Syrphophagus*

## Apidae

*Coelopencyrtus*

## Braconidae

*Ooencyrtus*

## Cynipidae

*Tineophoctonus*

## Chrysididae

*Zarhopaloides*

## Dryinidae

*Cheiloneurus*, *Echthrogonatopus*,*Helegonatopus*, *Hypergonatopus*,*Ooencyrtus*

## Encyrtidae

*Cerapteroceroides*, *Cerapterocerus*,*Cheiloneurus*, *Coccidoctonus*, *Epiblatticida*,*Gahaniella*, *Prochiloneurus* Silvestri,*Psyllaephagus*, *Tyndarichus*, *Tyndaricopsis*,*Zaomma*

## Formicidae

? *Ananusia*

## Hylaeidae

*Coelopencyrtus*

## Pteromalidae

*Cheiloneurus*, *Coccidoctonus*

## Xylocopidae

*Coelopencyrtus*

## PLANT GALLS

*Mozartella*

## Proposed new synonymies

(Junior synonyms on right)

## Tribal

*Aenasiini* Kerrich stat. n. = *Neodiscodini**Trjapitzin* syn. n.

## Subtribal

*Anagryna* Hoffer = *Leptomastideina* Trjapitzin

syn. n.

## Generic

*Achalcerinys* Girault = *Echthrobaconomyia* Girault

syn. n.

*Aenasomyiella* Girault = *Zaomommoencyrtus*

Girault syn. n.

*Ageniaspis* Dahlbom = *Leuroceroides* Giraultsyn. n., = *Microrhopus* Girault syn. n.*Ananusia* Girault = *Myrmencyrtus* Gordh &

Trjapitzin syn. n.

*Austrochoreia* Girault = *Chinchilla* Giraultsyn. n., = *Chinchillisca* Ghesquière syn. n.*Callipteroma* Motschulsky = *Vosleria*

Timberlake syn. n.

*Carabunia* Waterston = *Elijahia* Girault, syn. n.,= *Schillerana* Girault syn. n.*Ceraptrocera* Girault = *Austrotropidia* Kerrich

syn. n.

*Cerchysiella* Girault = *Aratiscus* Ghesquièresyn. n., = *Aratus* Howard syn. n., =*Ericydnella* Girault syn. n., = *Mirrencyrtus*Girault syn. n., = *Prolitomastix* Hoffer syn. n.,= *Zeteticontus* Silvestri syn. n.*Charitopus* Förster = *Eupelmomorpha* Girault

syn. n.

*Cheiloneurus* Westwood = *Chrysopophagoides*Girault syn. n., = *Epicheiloneurus* Girault syn.n., = *Eusemionella* Girault syn. n., =*Eusemionopsis* Girault syn. n., =*Paracheiloneurus* Girault syn. n.*Coccidencyrtus* Ashmead = *Encyrtomyia* Giraultsyn. n., = *Neoadelencyrtus* Hayat, Alam &Agarwal syn. n., = *Omphalencyrtus* Girault

syn. n.

*Coccidoctonus* Crawford = *Cerchysiopsis* Girault

syn. n.

*Coccidoxenoides* Girault = *Pauridia* Timberlake

syn. n.

*Coelopencyrtus* Timberlake = *Epaenasomyia*Girault syn. n., = *Giraultella* Gahan & Fagansyn. n., = *Lymanera* Szelenyi syn. n.*Copidosoma* Ratzeburg = *Angeliconana* Giraultsyn. n., *Mesencyrtus* Timberlake syn. n.,*Mesocopidosomyia* Girault syn. n.,*Paracaenocercus* Girault syn. n., =*Parasteropaes* Girault syn. n., = *Pentacnemus*Howard syn. n., = *Pseudencyrtella* Giraultsyn. n., = *Zaomencyrtus* Girault syn. n.*Copidosomopsis* Girault = *Pentalitomastix* Eadysyn. n., = *Pseudolitomastix* Eady syn. n.*Copidosomyia* Girault = *Acridencyrtus* SubbaRao syn. n., = *Neochrysopophilus* Tachikawa

syn. n.

*Cowperia* Girault = *Aminellus* Masi syn. n.*Epiblatticida* Girault = *Blatticidella* Giraultsyn. n., = *Magellanana* Girault syn. n., =

- Microencyrtus* Girault **syn. n.**, =  
*Neasteropaeus* Girault **syn. n.**  
*Epidinocarsis* Girault = *Apoanagyrus* Compere  
**syn. n.**  
*Epistenoterys* Girault = *Gounodia* Girault **syn. n.**  
*Epitetracnemus* Girault = *Anabrolepis*  
 Timberlake **syn. n.**  
*Epitetralophidea* Girault = *Ectromomyiella*  
 Girault **syn. n.**  
*Exoristobia* Ashmead = *Mirsyrpophagus* Girault  
**syn. n.**, = *Parageniaspis* Masi **syn. n.**, =  
*Parasyrpophagus* Girault **syn. n.**  
*Helegonatopus* Perkins = *Chalcerinys* Perkins  
**syn. n.**, = *Euchalcerinys* Timberlake **syn. n.**  
*Hexencyrtus* Girault = *Calliencyrtus* De Santis  
**syn. n.**  
*Homalotylus* Mayr = *Anisotylus* Timberlake  
**syn. n.**  
*Hunterellus* Howard = *Australzaomma* Girault  
**syn. n.**  
*Hypergonatopus* Timberlake = *Aulonops*  
 Timberlake **syn. n.**  
*Isodromoides* Girault = *Neocopidosomyia*  
 Girault **syn. n.**  
*Lamennaisia* Girault = *Mercetencyrtus* Trjapitzin  
**syn. n.**, = *Sabirella* Agarwal, Agarwal & Khan  
**syn. n.**  
*Mahencyrtus* Masi = *Tyndarichoides* Mercet  
**syn. n.**, = *Protyndarichus* Mercet **syn. n.**  
*Meniscocephalus* Perkins = *Helmecephala* Noyes  
**syn. n.**  
*Mesanusia* Girault = *Blatticida* Girault **syn. n.**, =  
*Blatticidella* Gahan & Fagan **syn. n.**  
*Metaphaenodiscus* Mercet = *Keatsia* Girault  
**syn. n.**  
*Metaphycus* Mercet = *Oaphycus* Girault **syn. n.**  
*Neanagyrus* Girault = *Anisodromus* Riek **syn. n.**  
*Neastymachus* Girault = *Nikolskiella* Trjapitzin  
**syn. n.**, = *Pseudmicroterys* Shafee, Alam &  
 Agarwal **syn. n.**  
*Neocharitopus* Hayat, Alam & Agarwal =  
*Insleyia* Prinsloo & Annecke **syn. n.**  
*Neocladella* Girault = *Pteromalencyrtus* Girault  
**syn. n.**  
*Ooencyrtus* Ashmead = *Echthrodryinus* Perkins  
**syn. n.**, = *Tetracnemella* Girault **syn. n.**, =  
*Xesmatia* Timberlake **syn. n.**  
*Parablatricida* Girault = *Amaurilyma* Graham  
**syn. n.**, = *Desobius* Noyes **syn. n.**, =  
*Geniaspidius* Masi **syn. n.**, = *Holanusia*  
 Girault **syn. n.**, = *Symphycus* Masi **syn. n.**  
*Paratetracnemoidea* Girault = *Rhinoencyrtus*  
 Mercet **syn. n.**  
*Pentelicus* Howard = *Cowperella* Girault **syn. n.**,  
 = *Epaenasomyia* Girault **syn. n.**, =  
*Hemaenasius* Ashmead **syn. n.**  
*Procheiloneurus* Girault = *Raphaelana* Girault  
**syn. n.**  
*Pseudectroma* Girault = *Timberlakia* Mercet  
**syn. n.**  
*Pseudococcobius* Timberlake =  
*Australrhopoideus* Girault **syn. n.**, =  
*Pezaphycus* Nowicki **syn. n.**  
*Psyllaephagus* Ashmead = *Anagyropsis* Girault  
**syn. n.**, = *Calocerineloides* Girault **syn. n.**, =  
*Epanagyrus* Girault **syn. n.**  
*Raffaellia* Girault = *Raffaellisca* Ghesquière  
**syn. n.**  
*Rhytidothorax* Ashmead = *Anusomyia* Girault  
**syn. n.**, = *Ectromoides* Girault **syn. n.**, =  
*Mesanusomyia* Girault **syn. n.**, =  
*Swazencyrtus* Prinsloo & Annecke **syn. n.**  
*Syrphophagus* Ashmead = *Aphidencyrtus*  
 Ashmead **syn. n.**, = *Hexanusia* Girault **syn. n.**,  
 = *Nesyrrpophagus* Girault **syn. n.**  
*Tachinaephagus* Ashmead = *Phaenodiscoides*  
 Girault **syn. n.**  
*Tetracnemoidea* Howard = *Antipodencyrtus*  
 Kerrich **syn. n.**, = *Ectromella* Girault **syn. n.**
- Specific**  
*Anarhopus sydneyensis* Timberlake =  
*Arhopoideus semiargenteus* Girault **syn. n.**  
*Borrowella bioculata* Girault = *Borrowella*  
*consobrina* Girault **syn. n.**  
*Callipteroma australia* (Girault) = *Vosleria signata*  
 Timberlake **syn. n.**  
*Ceraptocerella apus* Girault = *Tropidophryne*  
*flandersi* Compere **syn. n.**  
*Cerchysiella glabriscutellum* (Girault) =  
*Mirrencyrtus arboris* Girault **syn. n.**  
*Cerchysiella nigrella* Girault = *Ericydnella*  
*ashmeadi* Girault **syn. n.**  
*Charitopus tricolor* (Girault) = *Eupelmomorpha*  
*hawthornei* Girault **syn. n.**  
*Cheiloneurus chlorodryini* Perkins =  
*Cheiloneurus dubius* Girault **syn. n.**  
*Cheiloneurus hugoi* (Girault) - *Cristatothorax*  
*nobilis* Girault **syn. n.**  
*Cheiloneurus novimandibularis* (Girault) =  
*Cristatothorax mandibularis* Girault **syn. n.**, =  
*Cristatothorax mackayensis* Girault **syn. n.**, =  
*Cristatothorax sublimis* Girault **syn. n.**, =  
*Cristatothorax partipes* Girault **syn. n.**  
*Cheiloneurus pasteurii* (Girault) = *Cristatothorax*  
*bidentimaxillae* Girault **syn. n.**, =  
*Cristatothorax vinculum* Girault **syn. n.**, =  
*Ephicheiloneurus albicoxa* Girault **syn. n.**, =  
*Cristatothorax bidentimaxillae poeta* Girault  
**syn. n.**  
*Cheiloneurus purpureicinctus* (Girault) =  
*Eusemionopsis centaurus* Girault **syn. n.**, =  
*Chrysopophagus varicellii* Girault **syn. n.**  
*Coccidoctonus dubius* (Girault) =  
*Rhopalencyrtoidea cinctifemur* Girault **syn. n.**,  
 = *Paraenasomyia liszti* Girault **syn. n.**

*Coccidoxenoides perminutus* Girault =  
*Fulgoridicida babinda* Girault **syn. n.**  
*Copidosoma perseverans* (Girault) = *Angeliconana*  
*eja* Girault **syn. n.**  
*Encyrtus argenticoxa* (Girault) = *Eucomys*  
*hibisci* Girault **syn. n.**, = *Eucomys*  
*aurantifasciata* Girault **syn. n.**, = *Eucomys*  
*argentiscapus* Girault **syn. n.**  
*Encyrtus prosperpinensis* (Girault) = *Eucomys*  
*hortensis* Girault **syn. n.**  
*Epitetrалophidea bicinctipes* Girault =  
*Epitetrалophidea bicinctipes emersoni* Girault  
**syn. n.**  
*Hexencyrtus albiclava* Girault = *Hexencyrtus*  
*fumosipennis* Girault **syn. n.**  
*Isodromoides triangularis* Girault =  
*Neocopidosomyia viridiscutellum* Girault  
**syn. n.**  
*Neocladella compressipes* Girault =  
*Pteromalencyrtus quadridentatus* Girault  
**syn. n.**  
*Neorhopus australicus* Girault = *Neorhopus*  
*australicus aureus* Girault **syn. n.**  
*Parablastothrix magniocolus* (Girault) =  
*Paraenocerus albifemur* Girault **syn. n.**  
*Parablatticida pachyscapa* Girault = *Holanusia*  
*convexus* Girault **syn. n.**  
*Psyllaephagus cicada* (Girault) = *Paraenasomyia*  
*dubia* Girault **syn. n.**  
*Psyllaephagus subgiganteus* (Girault) =  
*Psyllaephagus usticius* Riek **syn. n.**  
*Psyllaephagus suburbis* (Girault) =  
*Psyllaephagus fuscus* Riek **syn. n.**  
*Syrphophagus flavithorax* (Girault) =  
*Nesyrphophagus unguittatus* Girault **syn. n.**, =  
*Hexanusia sanguinithorax* Girault **syn. n.**  
*Tachinaephagus australiensis* (Girault) =  
*Phaenodiscoides australiensis* Girault **syn. n.**  
*Tassonia gloriae* Girault = *Neblatticida*  
*tassoniaeformis* Girault **syn. n.**  
*Tetracnemoides bicolor* (Girault) = *Arhopoideus*  
*tertius* Girault **syn. n.**

## Proposed new combinations

(Original genus in brackets)

*Achalcerinys gorodkovi* (Myartseva) **comb. n.**  
*(Parasyrphophagus)*  
*Achalcerinys lindus* (Mercet) **comb. n.**  
*(Parasyrphophagus)*  
*Achalcerinys niveipes* (Girault) **comb. n.**  
*(Echthrobacomyia)*  
*Adelencyrtus mayurai* (Subba Rao) **comb. n.**  
*(Anabrolepis)*  
*Adelencyrtus minutus* (Girault) **comb. n.**  
*(Epitetrалophidea)*

*Adelencyrtus oceanicus* (Doutt) **comb. n.**  
*(Anabrolepis)*  
*Adelencyrtus quadriguttus* (Girault) **comb. n.**  
*(Epitetracnemus)*  
*Adelencyrtus quinquedentatus* (Girault) **comb. n.**  
*(Epiencyrtoides)*  
*Aenasiella eucalypti* (Dodd) **comb. n.**  
*(Coccidencyrtus)*  
*Aenasiella lunlata* (Girault) **comb. n.**  
*(Coccidoxenus)*  
*Aenasiella sidneyi* (Girault) **comb. n.**  
*(Encyrtoides)*  
*Aenasioidea aligerhini* (Girault) **comb. n.**  
*(Aphycus)*  
*Aenasomyiella poeta* (Girault) **comb. n.**  
*(Zaomommoencyrtus)*  
*Ageniaspis nigra* (Girault) **comb. n.**  
*(Leuroceroides)*  
*Ageniaspis striatithorax* (Girault) **comb. n.**  
*(Microrhopus)*  
*Amira tarsata* (Ashmead) **comb. n.**  
*(Howardiella)*  
*Anagyrodes dei* (Girault) **comb. n.** (*Paracladella*)  
*Anagyrodes odacon* (Walker) **comb. n.**  
*(Encyrtus)*  
*Anagyrodes perkinsi* (Subba Rao) **comb. n.**  
*(Neocladia)*  
*Anagyrus bellus* (Girault) **comb. n.** (*Dinocarsis*)  
*Anagyrus cooki* (Girault) **comb. n.** (*Dinocarsis*)  
*Anagyrus darevskii* (Trjapitzin) **comb. n.**  
*(Doliphoceras)*  
*Anagyrus fasciiscapus* (Girault) **comb. n.**  
*(Dinocarsis)*  
*Anagyrus flavimesopleurum* (Girault) **comb. n.**  
*(Dinocarsis)*  
*Anagyrus foersteri* (Girault) **comb. n.**  
*(Epidinocarsis)*  
*Anagyrus lineatipes* (Girault) **comb. n.**  
*(Dinocarsis)*  
*Anagyrus mirus* (Girault) **comb. n.**  
*(Epidinocarsis)*  
*Anagyrus nigriflagellum* (Girault) **comb. n.**  
*(Epidinocarsis)*  
*Anagyrus qadrii* (Hayat, Alam & Agarwal)  
**comb. n.** (*Leptanusia*)  
*Anagyrus similis* (Girault) **comb. n.**  
*(Epidinocarsis)*  
*Anagyrus spica* (Girault) **comb. n.** (*Dinocaris*)  
*Anagyrus subflaviceps* (Girault) **comb. n.**  
*(Epidinocarsis)*  
*Anagyrus varithorax* (Girault) **comb. n.**  
*(Leptomastix)*  
*Ananusia australis* (Gordh & Trjapitzin)  
**comb. n.** (*Myrmencyrtus*)  
*Austrochoreia keatsi* (Girault) **comb. n.**  
*(Chinchilla)*

- Austroencyrtus guamensis* (Fullaway) **comb. n.**  
 (Cerchysius)  
*Bacalusa tachikawai* (Shafee, Alam & Agarwal) **comb. n.** (*Doliphoceras*)  
*Blastothrix siddiqii* (Bhatnagar) **comb. n.** (*Encyrtus*)  
*Carabunia dilatata* (Girault) **comb. n.** (*Schillerana*)  
*Carabunia poeta* (Girault) **comb. n.** (*Elijahia*)  
*Cerchysiella abilis* (Silvestri) **comb. n.** (*Zeteticontus*)  
*Cerchysiella amurensis* (Khlopunov) **comb. n.** (*Zeteticontus*)  
*Cerchysiella centennalis* (Erdös) **comb. n.** (*Zeteticontus*)  
*Cerchysiella glabriscutellum* (Girault) **comb. n.** (*Mirrencyrtus*)  
*Cerchysiella insularis* (Howard) **comb. n.** (*Bothriothorax*)  
*Cerchysiella kamathi* (Mani & Saraswat) **comb. n.** (*Prionomitus*)  
*Cerchysiella laevigata* (De Santis) **comb. n.** (*Aratiscus*)  
*Cerchysiella laeviscutum* (Thomson) **comb. n.** (*Microterys*)  
*Cerchysiella perkinsi* (Timberlake) **comb. n.** (*Zeteticontus*)  
*Cerchysiella planiscutellum* (Mercet) **comb. n.** (*Zeteticontus*)  
*Cerchysiella punctiscutellum* (Subba Rao) **comb. n.** (*Zeteticontus*)  
*Cerchysiella scutellata* (Howard) **comb. n.** (*Aratus*)  
*Cerchysiella takenakai* (Tachikawa) **comb. n.** (*Zeteticontus*)  
*Cerchysiella utilis* (Noyes) **comb. n.** (*Zeteticontus*)  
*Cerchysius australis* (Girault) **comb. n.** (*Copidosoma*)  
*Charitopus bicolor* (Girault) **comb. n.** (*Eupelmomorpha*)  
*Charitopus quadricolor* (Girault) **comb. n.** (*Eupelmomorpha*)  
*Charitopus tricolor* (Girault) **comb. n.** (*Eupelmomorpha*)  
*Cheiloneuromyia planchoniae* (Howard) **comb. n.** (*Encyrtus*)  
*Cheiloneurus beerwahi* (Girault) **comb. n.** (*Epicheiloneurus*)  
*Cheiloneurus burnsi* (Girault) **comb. n.** (*Eusemionella*)  
*Cheiloneurus cheles* (Walker) **comb. n.** (*Encyrtus*)  
*Cheiloneurus cinctiventris* (Girault) **comb. n.** (*Epicheiloneurus*)  
*Cheiloneurus cristatus* (Girault) **comb. n.** (*Eusemionella*)  
*Cheiloneurus hemipterus* (Girault) **comb. n.** (*Eusemionella*)  
*Cheiloneurus hugoi* (Girault) **comb. n.** (*Cristatothorax*)  
*Cheiloneurus latiscapus* (Girault) **comb. n.** (*Cristatothorax*)  
*Cheiloneurus margiscutellum* (Girault) **comb. n.** (*Baeoanusia*)  
*Cheiloneurus mazzinini* (Girault) **comb. n.** (*Cristatothorax*)  
*Cheiloneurus novimandibularis* (Girault) **comb. n.** (*Cristatothorax*)  
*Cheiloneurus pasteurii* (Girault) **comb. n.** (*Chrysopophagus*)  
*Cheiloneurus purpureicinctus* (Girault) **comb. n.** (*Chrysopophagus*)  
*Cheiloneurus rara* (Girault) **comb. n.** (*Eusemionella*)  
*Cheiloneurus regis* (Girault) **comb. n.** (*Cristatothorax*)  
*Cheiloneurus viridiscutum* (Girault) **comb. n.** (*Cristatothorax*)  
*Cheiloneurus westwoodi* (Girault) **comb. n.** (*Chrysopophagoides*)  
*Coccidencyrtus albiflagellum* (Girault) **comb. n.** (*Encyrtomyia*)  
*Coccidencyrtus albitarsis* (Girault) **comb. n.** (*Encyrtomyia*)  
*Coccidencyrtus auricornis* (Girault) **comb. n.** (*Epitetracnemus*)  
*Coccidencyrtus australis* (Girault) **comb. n.** (*Encyrtomyia*)  
*Coccidencyrtus bicolor* (Girault) **comb. n.** (*Coccidoxenus*)  
*Coccidencyrtus mandibularis* (Hayat, Alam & Agarwal) **comb. n.** (*Neoadelencyrtus*)  
*Coccidencyrtus secundus* (Girault) **comb. n.** (*Encyrtomyia*)  
*Coccidencyrtus wallacei* (Girault) **comb. n.** (*Omphalencyrtus*)  
*Coccidoctonus dubius* (Girault) **comb. n.** (*Rhopalencyrtoidea*)  
*Coccidoctonus lowelli* (Girault) **comb. n.** (*Cerchysiopsis*)  
*Coccidoctonus oviductus* (Girault) **comb. n.** (*Cerchysius*)  
*Coccidoctonus psyllae* (Riek) **comb. n.** (*Echthroplexis*)  
*Coccidoctonus terebratus* (Hayat, Alam & Agarwal) **comb. n.** (*Echthroplexis*)  
*Coccidoxenoides peregrinus* (Timberlake) **comb. n.** (*Pauridia*)  
*Coelopencyrtus asperithorax* (Rayment) **comb. n.** (*Aphycus*)  
*Coelopencyrtus crassicornis* (Szelenyi) **comb. n.** (*Lymanera*)  
*Coelopencyrtus krishnamurtii* (Mahdihassan) **comb. n.** (*Giraultella*)

- Coelopencyrtus pallidiceps* (Girault) **comb. n.**  
 (Epaenasomyia)  
*Coelopencyrtus xylocopae* (Girault) **comb. n.**  
 (Epaenasomyia)  
*Copidosoma aeripes* (Girault) **comb. n.**  
 (Zaomencyrtus)  
*Copidosoma bucculatricis* (Howard) **comb. n.**  
 (Pentacnemus)  
*Copidosoma daccaensis* (Mani) **comb. n.**  
 (Litomastix)  
*Copidosoma fasciatum* (Girault) **comb. n.**  
 (Pseudencyrtella)  
*Copidosoma insularis* (Timberlake) **comb. n.**  
 (Mesencyrtus)  
*Copidosoma javae* (Girault) **comb. n.**  
 (Paracopidosomopsis)  
*Copidosoma javensis* (Girault) **comb. n.**  
 (Copidosomopsis)  
*Copidosoma lepidopterophagus* (Girault)  
**comb. n.** (Zaomencyrtus)  
*Copidosoma longiartus* (Girault) **comb. n.**  
 (Liothorax)  
*Copidosoma lotae* (Girault) **comb. n.**  
 (Parasteropaesus)  
*Copidosoma lucetius* (Walker) **comb. n.**  
 (Encyrtus)  
*Copidosoma manilae* (Ashmead) **comb. n.**  
 (Coccidencyrtus)  
*Copidosoma parkeri* (Girault) **comb. n.**  
 (Helegonotopus)  
*Copidosoma perseverans* (Girault) **comb. n.**  
 (Paracaenocercus)  
*Copidosoma salacon* (Walker) **comb. n.**  
 (Encyrtus)  
*Copidosoma variventris* (Girault) **comb. n.**  
 (Mesocopidosomyia)  
*Copidosoma walshi* (Mercet) **comb. n.**  
 (Litomastix)  
*Copidosomopsis arenicola* (Trjapitzin) **comb. n.**  
 (Pentalitomastix)  
*Copidosomopsis bohemicus* (Hoffer) **comb. n.**  
 (Pentalitomastix)  
*Copidosomopsis nocoliae* (Eady) **comb. n.**  
 (Pseudolitomastix)  
*Copidosomopsis plethoricus* (Caltagirone)  
**comb. n.** (Pentalitomastix)  
*Copidosomyia ambiguous* (Subba Rao) **comb. n.**  
 (Acridencyrtus)  
*Copidosomyia bhimolpornae* (Tachikawa)  
**comb. n.** (Neochrysopophilus)  
*Cowperia areolata* (Walker) **comb. n.** (Encyrtus)  
*Cowperia indica* (Kerrich) **comb. n.** (Aminellus)  
*Cowperia sumatraensis* (Kerrich) **comb. n.**  
 (Aminellus)  
*Cryptanusia gigantea* (Girault) **comb. n.**  
 (Xenanusia)  
*Diaphorencyrtus diaphorinae* (Lin & Tao)  
**comb. n.** (Psyllaephagus)
- Diaphorencyrtus diaphorinae* (Myartseva &  
 Trjapitzin) **comb. n.** (Aphidencyrtus)  
*Diasula glabriscutellum* (Girault) **comb. n.**  
 (Liothorax)  
*Diasula homeri* (Girault) **comb. n.**  
 (Parasyrphophagus)  
*Diasula semiargentipes* (Girault) **comb. n.**  
 (Parasyrphophagus)  
*Doddanusia viridiflava* (Dodd) **comb. n.**  
 (Anusia)  
*Doliphoceras fraternus* (Perkins) **comb. n.**  
 (Anagyrus)  
*Doliphoceras punctifrons* (Timberlake) **comb. n.**  
 (Anagyrus)  
*Doliphoceras tantaleus* (Perkins) **comb. n.**  
 (Anagyrus)  
*Encyrtoidea compressifemur* (Girault) **comb. n.**  
 (Nezarhopalus)  
*Encyrtus argenticoxa* (Girault) **comb. n.**  
 (Eucomys)  
*Encyrtus proserpinensis* (Girault) **comb. n.**  
 (Eucomys)  
*Encyrtus saissetiae* (Yasumatsu & Yoshimura)  
**comb. n.** (Eucomys)  
*Eotopus beneficus* (Shafee) **comb. n.**  
 (Ericydnus)  
*Epiblatticida aereitibiae* (Girault) **comb. n.**  
 (Blatticidella)  
*Epiblatticida argentipes* (Girault) **comb. n.**  
 (Epitetracnemus)  
*Epiblatticida caudatus* (Girault) **comb. n.**  
 (Neasteropaesus)  
*Epiblatticida minutissimus* (Girault) **comb. n.**  
 (Microencyrtus)  
*Epidinocarsis anamalaianus* (Mani & Kaul)  
**comb. n.** (Anagyrus)  
*Epidinocarsis bermudensis* (Kerrich) **comb. n.**  
 (Apoanagyrus)  
*Epidinocarsis diversicornis* (Howard) **comb. n.**  
 (Copidosoma)  
*Epidinocarsis elgeri* (Kerrich) **comb. n.**  
 (Apoanagyrus)  
*Epidinocarsis gaudens* (Kerrich) **comb. n.**  
 (Apoanagyrus)  
*Epidinocarsis lopezi* (De Santis) **comb. n.**  
 (Apoanagyrus)  
*Epidinocarsis malenotus* (De Santis) **comb. n.**  
 (Leptomastix)  
*Epidinocarsis marquesanus* (Timberlake)  
**comb. n.** (Anagyrus)  
*Epidinocarsis montivagus* (De Santis) **comb. n.**  
 (Leptomastix)  
*Epidinocarsis rotundiceps* (Girault) **comb. n.**  
 (Dinocarsis)  
*Epidinocarsis trinidadensis* (Kerrich)  
**comb. n.** (Apoanagyrus)  
*Epistenoterys mellea* (Girault) **comb. n.**  
 (Gounodia)

- Epitetracnemus extraneus* (Timberlake) **comb. n.**  
*(Anabrolepis)*  
*Epitetracnemus japonicus* (Ishii) **comb. n.**  
*(Anabrolepis)*  
*Epitetracnemus lindingaspidis* (Tachikawa) **comb. n.** *(Anabrolepis)*  
*Epitetracnemus zetterstedti* (Westwood) **comb. n.**  
*(Encyrtus)*  
*Epitetrалophidea articulus* (Girault) **comb. n.**  
*(Ectromomyiella)*  
*Epitetrалophidea magnithorax* (Girault) **comb. n.**  
*(Ooencyrtus)*  
*Erencyrtus keatsi* (Girault) **comb. n.**  
*(Mesastymachus)*  
*Exoristobia columbi* (Girault) **comb. n.**  
*(Mirsyropophagus)*  
*Exoristobia funeralis* (Girault) **comb. n.**  
*(Parasyropophagus)*  
*Exoristobia macrocerus* (Masi) **comb. n.**  
*(Parageniaspis)*  
*Gentakola trifasciata* (Saraswat) **comb. n.**  
*(Comperiella)*  
*Gyransoidea albiclavata* (Ashmead) **comb. n.**  
*(Aphycus)*  
*Gyransoidea mirzai* (Agarwal) **comb. n.**  
*(Anagyrus)*  
*Helegonatopus apicicornis* (Timberlake) **comb. n.** *(Euchalcerinys)*  
*Helegonatopus eximius* (Perkins) **comb. n.**  
*(Chalcerinys)*  
*Hexencyrtus bucculentus* (De Santis) **comb. n.**  
*(Calliencyrtus)*  
*Hunterellus brunneus* (Girault) **comb. n.**  
*(Australzaomma)*  
*Hunterellus mysorensis* (Mani) **comb. n.**  
*(Ixodiphagus)*  
*Hypergonatopus bifasciatus* (Timberlake) **comb. n.** *(Aulonops)*  
*Kakaoburra angeliconini* (Girault) **comb. n.**  
*(Echthrobaccha)*  
*Lamennaisia ambigua* (Nees) **comb. n.**  
*(Encyrtus)*  
*Lemennaisia indica* (Agarwal, Agarwal & Khan) **comb. n.** *(Sabirella)*  
*Mahencyrtus aereifemur* (Girault) **comb. n.**  
*(Echthrogonatopus)*  
*Mahencyrtus comara* (Walker) **comb. n.**  
*(Encyrtus)*  
*Mahencyrtus gracilis* (Girault) **comb. n.**  
*(Zarhopaloides)*  
*Mahencyrtus longifasciatipennis* (Girault) **comb. n.** *(Zarhopaloides)*  
*Mahencyrtus nitidus* (Howard) **comb. n.**  
*(Encyrtus)*  
*Meniscocephalus albisetosus* (Noyes) **comb. n.**  
*(Helmecephala)*  
*Meniscocephalus exflores* (Trjapitzin) **comb. n.**  
*(Helmecephala)*
- Mesanusia ahmeadi* (Girault) **comb. n.**  
*(Blatticida)*  
*Metaphaenodiscus umbilicatus* (Girault) **comb. n.**  
*(Keatsia)*  
*Metaphycus argenteus* (Girault) **comb. n.**  
*(Aphycus)*  
*Metaphycus atriphragma* (Girault) **comb. n.**  
*(Aphycus)*  
*Metaphycus bicinctitibiae* (Girault) **comb. n.**  
*(Aphycopsis)*  
*Metaphycus bowensis* (Girault) **comb. n.**  
*(Aphycus)*  
*Metaphycus buderimi* (Girault) **comb. n.**  
*(Aphycus)*  
*Metaphycus fuscidorsum* (Gahan) **comb. n.**  
*(Aphycus)*  
*Metaphycus iohneumon* (Girault) **comb. n.**  
*(Aphycus)*  
*Metaphycus keatsi* (Girault) **comb. n.** *(Aphycus)*  
*Metaphycus nigrivarius* (Girault) **comb. n.**  
*(Aphycus)*  
*Metaphycus parkeri* (Girault) **comb. n.**  
*(Aenasomyiella)*  
*Metaphycus sanguinithorax* (Girault) **comb. n.**  
*(Aphycus)*  
*Metaphycus semialbus* (Girault) **comb. n.**  
*(Aphycus)*  
*Metaphycus tricinctus* (Girault) **comb. n.**  
*(Aphycus)*  
*Metaphycus turneri* (Girault) **comb. n.** *(Aphycus)*  
*Metaphycus varius* (Girault) **comb. n.**  
*(Aenasioidea)*  
*Metaphycus verdini* (Girault) **comb. n.**  
*(Aphycus)*  
*Neanagyrus niger* (Riek) **comb. n.**  
*(Anisodromus)*  
*Neanagyrus tarsius* (Riek) **comb. n.**  
*(Anisodromus)*  
*Neastymachus angustifrons* (Shafee, Alam & Agarwal) **comb. n.** *(Pseudmicroterys)*  
*Neastymachus burski* (Shafee, Alam & Agarwal) **comb. n.** *(Pseudmicroterys)*  
*Neastymachus cerococci* (Shafee, Alam & Agarwal) **comb. n.** *(Pseudmicroterys)*  
*Neastymachus delhiensis* (Subba Rao) **comb. n.**  
*(Microterys)*  
*Neastymachus luteus* (Nikol'skaya) **comb. n.**  
*(Microterys)*  
*Neblatticida lotae* (Girault) **comb. n.**  
*(Baeoanusia)*  
*Neblatticida perfuscipennis* (Girault) **comb. n.**  
*(Baeoanusia)*  
*Neocharitopus crassus* (Prinsloo & Annecke) **comb. n.** *(Insleya)*  
*Ooencyrtus alboantennatus* (Subba Rao) **comb. n.** *(Pentalitomastix)*  
*Ooencyrtus australiensis* (Girault) **comb. n.**  
*(Tetracnemella)*

- Ooencyrtus bucculatricis* (Howard) **comb. n.**  
 (Encyrtus)  
*Ooencyrtus destructor* (Perkins) **comb. n.**  
 (Echthrodryinus)  
*Ooencyrtus euxoae* (Girault) **comb. n.**  
 (Schedius)  
*Ooencyrtus flavipes* (Timberlake) **comb. n.**  
 (Xesmatia)  
*Ooencyrtus hyalinipennis* (Dodd) **comb. n.**  
 (Tetracnemella)  
*Ooencyrtus inconspicuus* (Girault) **comb. n.**  
 (Coccidoxenus)  
*Ooencyrtus larvarum* (Girault) **comb. n.**  
 (Paracopidosomopsis)  
*Ooencyrtus ovidivorus* (Girault) **comb. n.**  
 (Echthrodryinus)  
*Ooencyrtus pallidipes* (Ashmead) **comb. n.**  
 (Aphidencyrtus)  
*Ooencyrtus papilionidis* (Girault) **comb. n.**  
 (Stenoteropsis)  
*Ooencyrtus shakespearei* (Girault) **comb. n.**  
 (Coccidoxenus)  
*Ooencyrtus tricolor* (Girault) **comb. n.**  
 (Coccidoxenus)  
*Ooencyrtus xanthogaster* (Girault) **comb. n.**  
 (Echthrodryinus)  
*Parablastothrix magniocularis* (Girault) **comb. n.**  
 (Schedius)  
*Parablastothrix uncinclipes* (Girault) **comb. n.**  
 (Schedius)  
*Parablatlaticida aphycooides* (Masi) **comb. n.**  
 (Symphycus)  
*Parablatlaticida brevicornis* (Dalman) **comb. n.**  
 (Encyrtus)  
*Parablatlaticida vidua* (Masi) **comb. n.**  
 (Geniaspidius)  
*Paraenasomyia australiensis* (Girault) **comb. n.**  
 (Copidosoma)  
*Paralitomastix bicoloricornis* (Girault) **comb. n.**  
 (Coccidencyrtus)  
*Paralitomastix ipswichia* (Girault) **comb. n.**  
 (Coccidencyrtus)  
*Paraphaenodiscus parus* (Girault) **comb. n.**  
 (Encyrtus)  
*Paratetracnemoidea malenotti* (Mercet) **comb. n.**  
 (Rhinoencyrtus)  
*Parectromoidella abnormis* (Girault) **comb. n.**  
 (Dinocarsis)  
*Parectromoidella holbeini* (Girault) **comb. n.**  
 (Dinocarsis)  
*Parectromoidella laticincta* (Girault) **comb. n.**  
 (Epanusia)  
*Parectromoidella lowelli* (Girault) **comb. n.**  
 (Eucheiloneuropsis)  
*Parectromoidella pacorus* (Walker) **comb. n.**  
 (Encyrtus)  
*Parectromoidella regalis* (Girault) **comb. n.**  
 (Eucheiloneuropsis)
- Parectromoides varipes* (Girault) **comb. n.**  
 (Parastenoterys)  
*Pentelicus aeneifrons* (Girault) **comb. n.**  
 (Cowperella)  
*Pentelicus confusus* (Ashmead) **comb. n.**  
 (Hemaenasius)  
*Pentelicus varicornis* (Girault) **comb. n.**  
 (Epaenasomyia)  
*Procheiloneurus divinus* (Girault) **comb. n.**  
 (Eusemionella)  
*Prochiloneurus albiovductus* (Girault) **comb. n.**  
 (Cheiloneurus)  
*Prochiloneurus annulatus* (Ferrière) **comb. n.**  
 (Achrysopophagus)  
*Prochiloneurus aureipleurum* (Girault) **comb. n.**  
 (Achrysopophagus)  
*Prochiloneurus javanicus* (Ferrière) **comb. n.**  
 (Achrysopophagus)  
*Prochiloneurus nigricornis* (Girault) **comb. n.**  
 (Achrysopophagus)  
*Prochiloneurus nigriflagellum* (Girault) **comb. n.**  
 (Achrysopophagus)  
*Prochiloneurus taurus* (Girault) **comb. n.**  
 (Achrysopophagus)  
*Proleuroceroides pyrrillae* (Crawford) **comb. n.**  
 (Ooencyrtus)  
*Protynandarichoides cinctiventris* (Girault) **comb. n.**  
 (Echthrogonatopus)  
*Pseudectroma europaea* (Mercet) **comb. n.**  
 (Acerophagus)  
*Pseudococcobius melleicorpus* (Girault) **comb. n.**  
 (Australrhypoideus)  
*Pseudococcobius obenbergeri* (Nowicki) **comb. n.**  
 (Pezaphycus)  
*Pseudococcobius quinqueguttatus* (Girault)  
**comb. n.** (Aphycus)  
*Psyllaephagus aeneoculex* (Girault) **comb. n.**  
 (Coccidoxenus)  
*Psyllaephagus albiclava* (Girault) **comb. n.**  
 (Anagyrus)  
*Psyllaephagus anna* (Girault) **comb. n.**  
 (Anagryopsis)  
*Psyllaephagus arsanes* (Walker) **comb. n.**  
 (Encyrtus)  
*Psyllaephagus auricorpus* (Girault) **comb. n.**  
 (Anagyrus)  
*Psyllaephagus australiensis* (Girault) **comb. n.**  
 (Anagyrus)  
*Psyllaephagus brevicornis* (Girault) **comb. n.**  
 (Coccidoxenus)  
*Psyllaephagus burnsi* (Girault) **comb. n.**  
 (Anagryopsis)  
*Psyllaephagus cellinini* (Girault) **comb. n.**  
 (Anagyrus)  
*Psyllaephagus channingi* (Girault) **comb. n.**  
 (Anagyrus)  
*Psyllaephagus cicada* (Girault) **comb. n.**  
 (Anagyrus)

- Psyllaephagus cinctorum* (Girault) **comb. n.**  
 (Paraenasomyia)  
*Psyllaephagus compactus* (Girault) **comb. n.**  
 (Coccidoxenus)  
*Psyllaephagus dius* (Girault) **comb. n.**  
 (Anagyrus)  
*Psyllaephagus dyari* (Girault) **comb. n.**  
 (Anagyrus)  
*Psyllaephagus emersoni* (Girault) **comb. n.**  
 (Anagyrus)  
*Psyllaephagus grotii* (Girault) **comb. n.**  
 (Anagyrus)  
*Psyllaephagus guttatipes* (Girault) **comb. n.**  
 (Anagyrus)  
*Psyllaephagus hardyi* (Girault) **comb. n.**  
 (Blastothrix)  
*Psyllaephagus hegeli* (Girault) **comb. n.**  
 (Anagyrus)  
*Psyllaephagus howardi* (Girault) **comb. n.**  
 (Anagyrus)  
*Psyllaephagus irvingi* (Girault) **comb. n.**  
 (Anagyropsis)  
*Psyllaephagus longistylus* (Girault) **comb. n.**  
 (Anagyropsis)  
*Psyllaephagus mazzinini* (Girault) **comb. n.**  
 (Anagyrus)  
*Psyllaephagus mercurius* (Girault) **comb. n.**  
 (Anagyropsis)  
*Psyllaephagus minutellus* (Girault) **comb. n.**  
 (Tetracnemella)  
*Psyllaephagus novipurpureus* (Girault) **comb. n.**  
 (Anagyrus)  
*Psyllaephagus pallidipes* (Girault) **comb. n.**  
 (Aenasiella)  
*Psyllaephagus pegasus* (Girault) **comb. n.**  
 (Paraenasomyia)  
*Psyllaephagus penni* (Girault) **comb. n.**  
 (Anagyrus)  
*Psyllaephagus punctatiscutum* (Girault) **comb. n.**  
 (Epanagyrus)  
*Psyllaephagus purpureus* (Girault) **comb. n.**  
 (Anagyrus)  
*Psyllaephagus ramosus* (Girault) **comb. n.**  
 (Calocerineloides)  
*Psyllaephagus richteri* (Girault) **comb. n.**  
 (Anagyropsis)  
*Psyllaephagus rubensi* (Girault) **comb. n.**  
 (Coccidoxenus)  
*Psyllaephagus semicitripes* (Girault) **comb. n.**  
 (Coccidoxenus)  
*Psyllaephagus smaragdus* (Girault) **comb. n.**  
 (Anagyropsis)  
*Psyllaephagus spondyliaspidis* (Girault) **comb. n.**  
 (Anagyropsis)  
*Psyllaephagus spongitus* (Girault) **comb. n.**  
 (Anagyrus)  
*Psyllaephagus subgiganteus* (Girault) **comb. n.**  
 (Anagyrus)
- Psyllaephagus suburbis* (Girault) **comb. n.**  
 (Blastothrix)  
*Psyllaephagus terraefilius* (Girault) **comb. n.**  
 (Anagyropsis)  
*Psyllaephagus turbulentus* (Girault) **comb. n.**  
 (Anagyropsis)  
*Psyllaephagus turneri* (Girault) **comb. n.**  
 (Blastothrix)  
*Psyllaephagus viridiscutellum* (Girault) **comb. n.**  
 (Tetracnemella)  
*Psyllaephagus worcesteri* (Girault) **comb. n.**  
 (Coccidoxenus)  
*Psyllaephagus wundti* (Girault) **comb. n.**  
 (Coccidoxenus)  
*Psyllaephagus xuthus* (Walker) **comb. n.**  
 (Encyrtus)  
*Psyllaephagus zameis* (Walker) **comb. n.**  
 (Encyrtus)  
*Rhopalencyrtoidea perplexa* (Girault) **comb. n.**  
 (Nezarhopalus)  
*Rhopus extraclavus* (Girault) **comb. n.**  
 (Xanthoencyrtus)  
*Rhopus garibaldia* (Girault) **comb. n.**  
 (Xanthoencyrtus)  
*Rhopus keatsi* (Girault) **comb. n.**  
 (Scelioencyrtus)  
*Rhopus tricolor* (Girault) **comb. n.**  
 (Scelioencyrtus)  
*Rhytidothorax aereiscutellum* (Girault) **comb. n.**  
 (Anusomyia)  
*Rhytidothorax auratiscutum* (Girault) **comb. n.**  
 (Anusomyia)  
*Rhytidothorax ferus* (Girault) **comb. n.**  
 (Mesanusomyia)  
*Rhytidothorax latiscapus* (Prinsloo & Annecke) **comb. n.** (Swazencyrtus)  
*Rhytidothorax purpureiscutellum* (Girault) **comb. n.** (Ectromoides)  
*Saprencyrtus casuarinae* (Girault) **comb. n.**  
 (Parasyrphophagus)  
*Syrphophagus africanus* (Gahan) **comb. n.**  
 (Aphidencyrtus)  
*Syrphophagus aphidivorus* (Mayr) **comb. n.**  
 (Encyrtus)  
*Syrphophagus aquacyaneus* (Girault) **comb. n.**  
 (Coccidoxenus)  
*Syrphophagus cassatus* (Annecke) **comb. n.**  
 (Aphidencyrtus)  
*Syrphophagus cinctipes* (Girault) **comb. n.**  
 (Neasteropaeus)  
*Syrphophagus feralis* (Girault) **comb. n.**  
 (Paraenasomyia)  
*Syrphophagus flavithorax* (Girault) **comb. n.**  
 (Nesyrphophagus)  
*Syrphophagus hofferi* (Hayat) **comb. n.**  
 (Aphidencyrtus)  
*Syrphophagus inquisitor* (Howard) **comb. n.**  
 (Encyrtus)

*Syrphophagus kumaoensis* (Bhatnagar) **comb. n.**  
(*Coccidencyrthus*)  
*Syrphophagus luciani* (Girault) **comb. n.**  
(*Echthrobaccha*)  
*Syrphophagus mamitus* (Walker) **comb. n.**  
(*Encyrtus*)  
*Syrphophagus merceti* (Masi) **comb. n.**  
(*Encyrtus*)  
*Syrphophagus metallicus* (Girault) **comb. n.**  
(*Aratus*)  
*Syrphophagus nigricornis* (Girault) **comb. n.**  
(*Hexanusia*)  
*Syrphophagus obscurus* (Girault) **comb. n.**  
(*Neasteropaeus*)  
*Syrphophagus occidentalis* (Girault) **comb. n.**  
(*Cerchysius*)  
*Syrphophagus parvus* (Girault) **comb. n.**  
(*Cerchysiopsis*)  
*Syrphophagus perubius* (Girault) **comb. n.**  
(*Coccidoxenus*)  
*Syrphophagus puparia* (Girault) **comb. n.**  
(*Epiblattica*)  
*Syrphophagus quercicola* (Hoffer) **comb. n.**  
(*Aphidencyrthus*)  
*Syrphophagus raffaellini* (Girault) **comb. n.**  
(*Habrolepoidea*)  
*Syrphophagus similis* (Prinsloo) **comb. n.**  
(*Aphidencyrthus*)  
*Syrphophagus tachikawai* (Hoffer) **comb. n.**  
(*Aphidencyrthus*)  
*Syrphophagus taeniatius* (Förster) **comb. n.**  
(*Encyrtus*)  
*Syrphophagus varicornis* (Girault) **comb. n.**  
(*Neasteropaeus*)  
*Szelenyiola prosperis* (Ferrière) **comb. n.**  
(*Ooencyrtus*)  
*Tachinaephagus australiensis* (Girault) **comb. n.**  
(*Phaenodiscus*)  
*Tachinaephagus lutheri* (Girault) **comb. n.**  
(*Phaenodiscoides*)  
*Tachinaephagus lyperosi* (Ferrière) **comb. n.**  
(*Cerchysius*)  
*Tassonia magniclava* (Hayat & Subba Rao) **comb. n.**  
(*Aphidencyrthus*)  
*Teleterebratus amplis* (Girault) **comb. n.**  
(*Aenasiella*)  
*Teleterebratus claripennis* (Girault) **comb. n.**  
(*Rhopalencyrtoidea*)  
*Tetracnemoidea bicolor* (Girault) **comb. n.**  
(*Ectromella*)  
*Tetracnemoidea procellosa* (Kerrich) **comb. n.**  
(*Antipodencyrthus*)  
*Trechnites viridiscutellum* (Girault) **comb. n.**  
(*Encyrtomyia*)  
*Tyndarichus particornis* (Girault) **comb. n.**  
(*Epiblattica*)  
*Xenanusia flava* (Girault) **comb. n.**  
(*Anusia*)

*Zarhopaloides auricaput* (Girault) **comb. n.**  
(*Oencyrtus*)  
*Zarhopaloides cinctithorax* (Girault) **comb. n.**  
(*Anagyropsis*)

## Proposed new status

*Neocladia violacea* Masi **stat. n.** (from subsp. of  
*Neocladia howardi* Perkins)

## Replacement names

*Anagyryus ferus* **nom. n. for** *Anagyryus flavus*  
(Shafee, 1974) nec *Anagyryus flavus* Ishii  
(1928).  
*Anagyryus inopus* **nom. n. for** *Anagyryus indicus*  
Shafee, Alam & Agarwal (1975) nec *Anagyryus*  
*indicus* (Subba Rao, 1967)  
*Parablattica trinidadensis* **nom. n. for**  
*Parablattica convexus* (Noyes, 1980) nec  
*Parablattica convexus* (Girault, 1915)

## Lectotype designations

(Present genus in brackets)

*Aphycus australiensis* Howard (*Aphycopsis*)  
*Cowperia punctata* Girault (*Cowperia*)  
*Encyrtus arsanes* Walker (*Psyllaephagus*)  
*Encyrtus cheles* Walker (*Cheiloneurus*)  
*Encyrtus lucetius* Walker (*Copidosoma*)  
*Encyrtus odacon* Walker (*Anagyrodes*)  
*Encyrtus pacorus* Walker (*Parectromoidella*)  
*Encyrtus salacon* Walker (*Copidosoma*)  
*Encyrtus zameis* Walker (*Psyllaephagus*)  
*Liothorax glabriscutellum* Girault (*Diasula*)  
*Lutheria ajanea* Girault (*Lutherisca*)  
*Parageniaspis macrocerus* Masi (*Exoristobia*)  
*Parasyrpophagus casuarinae* Girault  
(*Saprencyrtus*)  
*Psyllaephagus abyssus* Riek (*Psyllaephagus*)  
*Psyllaephagus arctatus* Riek (*Psyllaephagus*)  
*Psyllaephagus argutus* Riek (*Psyllaephagus*)  
*Psyllaephagus asser* Riek (*Psyllaephagus*)  
*Psyllaephagus atavus* Riek (*Psyllaephagus*)  
*Psyllaephagus atratus* Riek (*Psyllaephagus*)  
*Psyllaephagus basileus* Riek (*Psyllaephagus*)  
*Psyllaephagus bliteus* Riek (*Psyllaephagus*)  
*Psyllaephagus bolus* Riek (*Psyllaephagus*)  
*Psyllaephagus brachiatus* Riek (*Psyllaephagus*)  
*Psyllaephagus clarus* Riek (*Psyllaephagus*)  
*Psyllaephagus cornuphagus* Riek (*Psyllaephagus*)  
*Psyllaephagus dignus* Riek (*Psyllaephagus*)  
*Psyllaephagus discretus* Riek (*Psyllaephagus*)  
*Psyllaephagus emarginatus* Riek (*Psyllaephagus*)  
*Psyllaephagus excisus* Riek (*Psyllaephagus*)

<i>Psyllaephagus exiguus</i> Riek ( <i>Psyllaephagus</i> )	<i>Psyllaephagus paradoxus</i> Riek ( <i>Psyllaephagus</i> )
<i>Psyllaephagus facetus</i> Riek ( <i>Psyllaephagus</i> )	<i>Psyllaephagus quadriannellus</i> Riek
<i>Psyllaephagus facilis</i> Riek ( <i>Psyllaephagus</i> )	( <i>Psyllaephagus</i> )
<i>Psyllaephagus faustus</i> Riek ( <i>Psyllaephagus</i> )	<i>Psyllaephagus uncinatus</i> Riek ( <i>Psyllaephagus</i> )
<i>Psyllaephagus fundus</i> Riek ( <i>Psyllaephagus</i> )	<i>Psyllaephagus utilis</i> Riek ( <i>Psyllaephagus</i> )
<i>Psyllaephagus funiculus</i> Riek ( <i>Psyllaephagus</i> )	<i>Psyllaephagus xi</i> Riek ( <i>Psyllaephagus</i> )
<i>Psyllaephagus longissimus</i> Riek ( <i>Psyllaephagus</i> )	<i>Psyllaephagus ypsilon</i> Riek ( <i>Psyllaephagus</i> )
<i>Psyllaephagus neoxenus</i> Riek ( <i>Psyllaephagus</i> )	<i>Symphycus aphycoides</i> Masi ( <i>Exoristobia</i> )

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